Vol. XI MAY, 1921 No. 5

Medical Lib

AMERICAN JOURNAL OF PUBLIC HEALTH

THE JOURNAL *of the* AMERICAN PUBLIC HEALTH ASSOCIATION

IN THIS ISSUE

Health and Welfare Departments
Sanitation in Bakeries—Food Inspection
and Symposium on Mental Hygiene

SPEAKERS, ATTENTION!

In some Sections, offers of papers for the Fiftieth Annual Meeting can not be considered after about May 25. See Program Rules in the February, 1921, JOURNAL, page 164. A list of Program Officers is given on the first white Advertising page of this JOURNAL. Short descriptions should accompany offers of papers.

Published monthly on the 20th by the American Public Health Association at
124 W. Polk Street, Chicago, Ill.

ADDRESS EDITORIAL MATTER TO
149 MASSACHUSETTS AVE.
BOSTON, MASS.

Subscription Price, $5.00 per Year. Single Copies, 50 cents.
A. P. H. A. Membership, Including Subscription, $5.00 per year.

Entered as second class matter January 30, 1920, at the postoffice at Chicago, Illinois, under the Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Section 1103, Act of October 3, 1917, authorized February 28, 1920.

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American Journal of Public Health

Official Monthly Publication of the American Public Health Association

Publication office: 124 W. Polk Street, Chicago, Ill.
Editorial office: 169 Massachusetts Ave., Boston, Mass.

Subscription price, $5 per year. American Public Health Association membership, including subscription, $5 per year. Subscriptions and memberships may be sent to the A. P. H. A., 169 Massachusetts Ave., Boston, Mass.

Vol. XI MAY, 1921 No. 5

MUNICIPAL ADMINISTRATION OF HEALTH AND WELFARE DEPARTMENTS

G. HARDY CLARK, M. D.,
Long Beach, Cal.

Read before Public Health Administration Section, American Public Health Association, at San Francisco, Cal., Sept. 13, 1920.

This author suggests separate departments of public service, safety and welfare. Fire, police and health would be divisions of public safety. Public welfare should include social welfare, public schools, public library and recreation. Social welfare should dispense all relief funds, and teach mental orderliness in homes with highest grade of trained nurses for teachers.

MANY of us here present can remember when the services of the municipal health officer were very largely confined to quarantining contagious diseases, and to the suppression of obnoxious odors. However, with the concentration of vast numbers of people in our cities, and with our rapidly expanding knowledge of the causes of disease, problems of health and sanitation by the score have been forced upon him until his importance in community development has become second to that of no other municipal officer. Perforce he has expanded from being merely a medical man to become also skilled in law, bacteriology, chemistry, engineering and sanitation. His duties now lead him through all the streets and alleys of the city. They take him to municipal buildings and churches, to theatres, stores, jails and schools. He keeps a watchful eye upon factories, laundries, barber shops and bath houses. He investigates the keeping and selling of foods, and the use of injurious adulterants, dye stuffs and preservatives. He examines milk and water. He goes far to investigate dairies, and he wades swamps to destroy the anopheles. He looks into ash cans and vaults, and into sewers for rats and other vermin. He quarantines, and combats epidemics and endemics. He keeps morbidity and mortality statistics. His ministrations extend to the city hospitals, bureaus, stations, laboratories, and to cemeteries and crematories. He regulates the actions of physicians and undertakers. Wherever public sanitation and health are endangered there is found the health officer to advise and admonish

and, when necessary, to enforce his mandates.

This field which so largely envelops and guards the lives and industries of men, ever widening and ever growing in the confidence of the people, has well proved its worth. Step by step it has developed upon public sentiment in each city to meet the needs of that city, as surely as any other department has grown to meet the needs at hand. And so it must be that the efficient administration of municipal health functions shall depend upon keeping the health officer close to those whom he serves. That he may receive this necessary sympathetic support each municipality must build, direct and own its own department, and appoint its own health officer.

SCOPE AND DUTIES OF THE SOCIAL WELFARE DEPARTMENT

The social welfare department of a city should be built upon an entirely different plan from that of the health department, and upon a no less sure foundation. While the health department has to do with unwholesome conditions and disease, endangering the public at large, the social welfare department has to do with social ignorance and error in their incipiency; with the intricacies and the secrecies of poverty, disease and crime. It deals especially with the relief, conduct and sociologic education of women and children in the privacy of their homes. For these and for many other reasons the work of the social welfare department is better conducted by women. That this may be done successfully the agent in command should have all the moral and material backing of every factor in the entire city in the prosecution of her work. She should be given complete authority for her every act, and be held responsible for results as surely as is the health officer or the fire chief. She should have charge within the municipality of the disbursing of all relief funds whether they come from public or private sources. She should direct and completely control all public nursing, prenatal care, care and feeding of infants, humane treatment of children, sanitation in the home, recreation, character training, truancy, juvenile delinquency, instruction in hygiene, social diseases, prevention of tuberculosis, the parents' educational center, the labor bureau, school health inspections and legal advice bureau. She should administer matters of social welfare for schools, for the county, the city, the state, and for national organizations by agreement with these bodies. She should administer trust funds for individuals and corporations that may be placed in her hands for the purpose of social relief and service.

By virtue of her many functions in homes needing welfare service, she will be enabled to prevent in a large measure the common catarrhal condition of the respiratory tract of children; to protect the tonsils and ears from contagion, and the lungs from the invasion of the tubercle bacillus. She will see that the teeth, nose and throat are kept in a sanitary condition, that the hands do not carry diseases from the bladder and bowel discharges, nor from the eyes and sexual organs. Flies, fleas and lice will be combated. Bed clothes, towels and eating utensils will be kept clean, and disinfection by sunlight regularly carried out. Malnutrition and intestinal infections will be prevented by the service of the agent.

All these things, and many more, must be taught by the agent in the home in which she labors, and this teaching, to be of permanent service, should result in the establishment of orderly habits on the part of the inmates. The disorderly mind cannot employ sanitary, dietetic or hygienic methods, nor will it follow other stable social practices. Mentality, fortunately, can be systematically improved in every grade of home that is reached by the social welfare agent, and it must be improved to secure reasonable returns for services rendered.

That there shall be no conflict between the health and welfare departments the former should be placed in the division of public safety and the latter in the division of public welfare. An ideal division of the municipal administrative functions should be somewhat as follows:

1. *Public Service:*
   Streets, sidewalks, building permits, plumbing, sewers, waste disposal, bridges, docks and wharfs, parks, playgrounds, water, electricity.
2. *Public Safety:*
   Fire, police, building inspection, harbor regulations, health.
3. *Public Welfare:*
   Social welfare, public schools, public library, recreation.

Each of the three divisions should have an advisory committee appointed by the city manager, subject to approval by the council. The manager should act as chairman of each committee and should appoint subcommittees to function in departments of their respective sections. Each committee should receive not less often than once a month a full report from the superintendent of each department to which it is attached.

Fig. 1 illustrates the proposed relations of the legislative and administrative bodies and the division of functions in the administrative body.

LONG BEACH SOCIAL WELFARE BUREAU

The direct system of administering social welfare relief and service, as distinguished from the indirect or associated plan, was instituted in Waterloo,

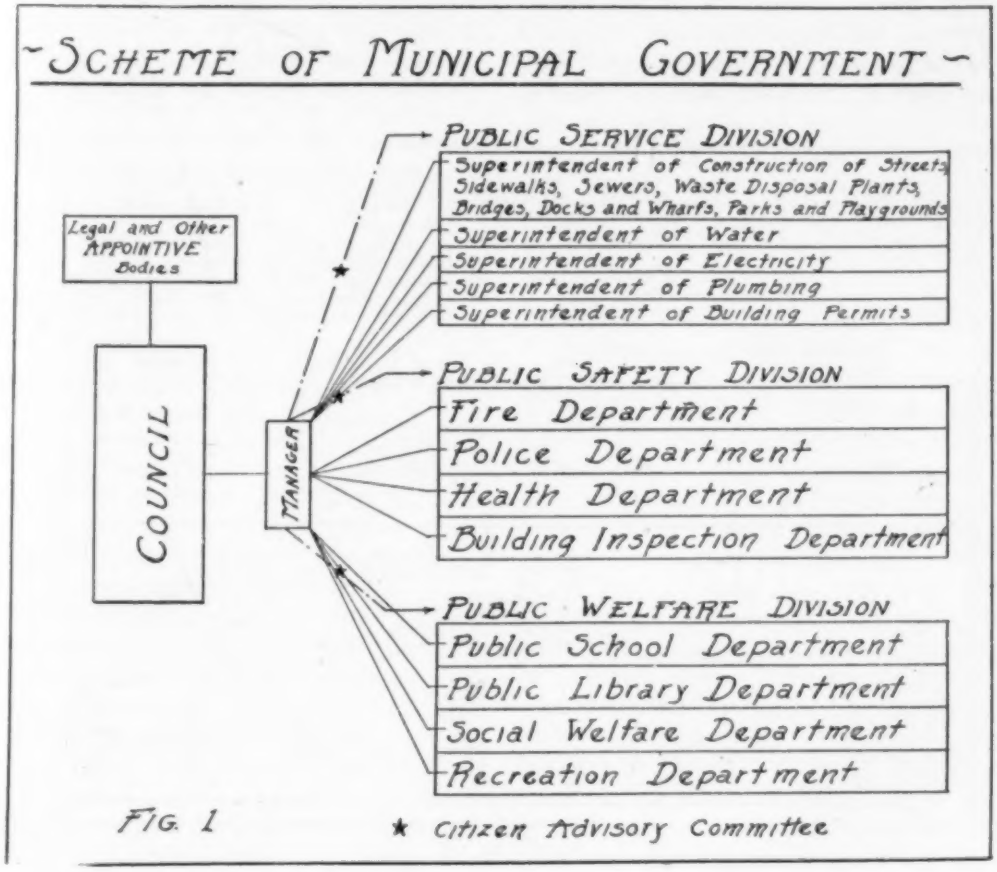

FIG. 1

Iowa, in 1907. It is better illustrated, however, in the work of the Long Beach, California, Social Welfare Bureau where it has been in operation for the last three years and is sufficiently established to permit of a description of its construction, its methods of functioning and of the results it has obtained. The system, it will be observed, eliminates all thought of coöperation of two or more agencies in the field, and requires that every public organization ministering to the social pathology of the city shall lose its identity in the centralized responsibility of a single agent.

Fig. 2 illustrates the plan of organization of the bureau.

It will be noted in the diagram that there are unequal sums of money placed in the hands of the agent by the four great organizations, namely, the county, city, public schools and social welfare league, for expenditure in the field. However, as each gives in proportion to its normal requirements, and as they profit equally by the tremendous returns from combined constructive service, no trouble has developed in adjusting the outlay required from them. A monthly report of all expenditures by the agent is submitted to the league, the county, the city and the school authorities. Especial satisfaction has been experienced in the use of private moneys administered by the Board of Directors of the Social Welfare League, and expended by the common agent. This is for the reason that the fund goes directly into homes for relief and service without paying for maintenance charges, and because it is not wasted upon impostors and upon county and city subjects.

Welfare work taken over by the nurses of the bureau is standardized by furnishing each with charts permitting of scoring upon a percentage basis the sanitary and hygienic conditions of homes, the remediable physical conditions of their inmates and the social or character qualities of the children.

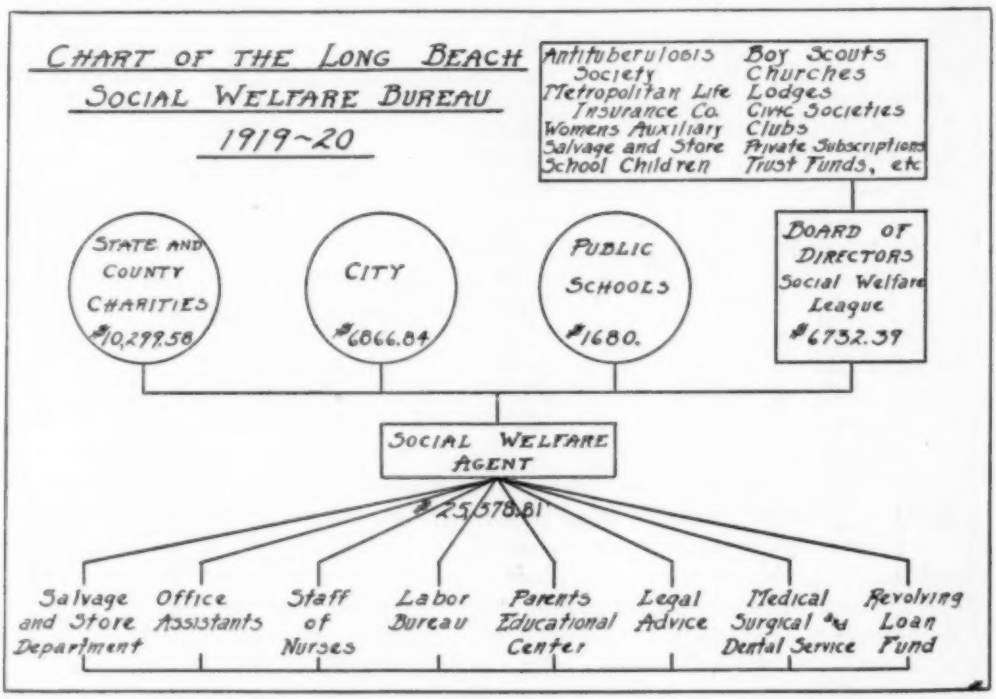

FIG. 2

When scoring the home, perfect conditions in each of the following sections is given 10; excellent, 9 to 10; good, 8 to 9; fair, 7 to 8; poor, 6 to 7; bad, 4 to 6; very bad, 0 to 4.

1. Air: ventilation, crowding, sleeping alone.
2. Sunlight in living and sleeping rooms.
3. Cleanliness of the house.
4. Cleanliness of the children.
5. Cleanliness of clothing, including diapers and bed clothing.
6. Screens, flies, vermin.
7. Garbage storage.
8. Quality of water, of milk and other food. Cooking and conservation of food.
9. Playmates and social environment.
10. Home training of children.

When scoring remediable physical conditions of children each of the following sections is given 10 if perfect, and 0 when not perfect:—

1. Eczema or other skin diseases.
2. Pediculosis or other parasites, including those of the intestine.
3. Neglected or delayed teeth: decayed, unclean, poor alignment, etc.
4. Neglected tonsils; discharging ears.
5. Neglected adenoids and nasal conditions.
7. Neglected eyes: infectious, vision, etc.
8. Deformities of the spine, feet and limbs.
9. Malnutrition: too fat, too thin, anæmic.
10. Other persistent, or recurrent remediable conditions.

When scoring the social or character qualities of children perfect performance in each of the following sections is given 10; excellent, 9 to 10; good, 8 to 9; fair, 7 to 8; poor, 6 to 7; bad, 4 to 6; very bad, 0 to 4. Where conditions permit of no score whatever X is given. Lack of space prohibits the giving of the various items in each section:—

1. To what extent does he care for his own person and needs?
2. To what extent does he abstain from injurious foods, habit-forming drugs and injurious practices?
3. To what extent does he share in the household duties?
4. How does he obtain money or its equivalent?
5. What is his sense of responsibility for family and public property?
6. How does he accept responsibility for his acts?
7. What is his valuation of dress and ornamentation?
8. What is his moral initiative?
9. His valuation and use of time?
10. His nervous stability, moroseness, flashes of anger, destructiveness, foolish remarks and laughter; his facial and ocular expression.

The scoring of both the physical and character qualities of children is carried out at the parents' educational center where the nurses are trained in the methods they employ in the field. It is at this place, also, that nurses are assigned to families in need of particular care and training, and it is to the center that they take children for special examinations and advice.

CHARACTER TRAINING FUNDAMENTAL

For the reason that sanitary and hygienic conditions of the home are directly related to the social or character qualities of its inmates, the services of the bureau are centered upon training parents and children in the employment of orderly methods in the care of their own persons and needs, in the care of the home and in their relations with the community. This work meets with the best response and success in the training of children under four years of age, at which time the ties between parent and child are particularly tender and intimate. However, 17% of the older children sent to the Long Beach center for character scoring returned repeatedly for training. At the first examination the

average score of all of the children over four years of age was 71.6%, and of those returned for training, 59%. The average score of the latter group has been raised to 75%.

The least satisfactory results have been obtained in the training of children whose parents were of pronounced low mentality. This is illustrated in the following diagrams. Here, Fig. 3, the father's intelligence, inner circle, is that of a person seven years of age, and his character qualities are, outer circle, only 40%. The mother's intelligence, Fig. 4, is that of a person but ten years of age and her character qualities are only 65%. Their eleven and one-half year old son, Fig. 5, has an intelligence quotient of 100%, inner circle, and had at the time of his first examination, a character score of 69%. The latter score was raised by persistent effort to 86%, outermost circle, but could not be maintained to this point.

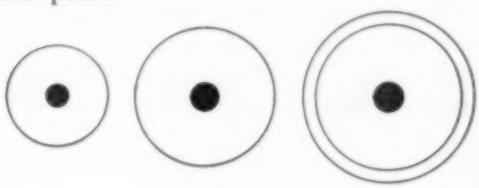

Fig. 3 Fig. 4 Fig. 5

RELATIONSHIP BETWEEN SERVICE AND RELIEF MEASURES

The county charities agency, together with the state-aid department, provides the Bureau with relief funds only, and it does not directly contribute service for the prevention of the poverty to which it ministers. Through their connection with the Bureau the public schools deal only with service for the prevention and control of disease and crime. However, the city charity funds, and the funds of the Social Welfare League, are used for both relief and service in the prevention and treatment of social pathology. As the persons in the care of all four agencies are municipal subjects, and are generally identical, they are given relief and service by the bureau in a unified and systematic manner. Service is given wherever it is needed without restraint, and the cost of relief is charged to the proper agency.

After deducting the items for office rent, clerk hire, transportation, supplies and other costs of operation, which amounted to 12% of the total expenditure, the Bureau had for the last fiscal year a balance of $22,501.20 which remained to be disbursed for relief and service.

Of this the amount used for relief, including food, rent, state aid, etc., was $13,441.85, and for service, including the salaries of the agent, nurses and the adviser in the Labor Bureau, was $8,999.35.

The relative and proportionate expenditures for relief and service by the four agencies in the Bureau, namely the county charities and state aid, the schools, the city welfare department, and the League, are given in the order named in Fig. 6. The dark section in each diagram represents the relief given and the light section the service rendered.

Fig. 6

The application of direct service in homes has made it possible for the Bureau to operate without the aid of milk stations, or of medical, surgical and dental clinics.

CONCLUSIONS

The associated or indirect plan of deal-

ing with the sociologic problems of a city should be abandoned.

A municipal social welfare department should be established, properly financed, and given a responsible head. It should be enabled to administer all social relief and service funds appropriated for these purposes by the Federal Government, the State, the county, the schools and private philanthropic organizations. The bureau should have an advisory board appointed by the legislative body of the city.

The foundation work of the department should be the teaching of mental orderliness or social character qualities in the home as the most effective method for the improvement and protection of children, and the prevention of poverty, disease and crime.

The field workers should be selected from the highest grade of trained nurses, who will be able to discover insanitary mental and physical states that interfere with the proper development of the child in the home.

There should be a parents' educational center in every community, conducted by the social welfare agent, where a standardized system of scoring homes and children is taught.

SANITATION IN BAKERIES

HARRY E. BARNARD, Ph. D.,
Director, American Institute of Baking,
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Read before Food and Drugs Section, American Public Health Association, at San Francisco, Cal., September 13, 1920.

The modern bakery has deserted the cellar and the back street and does its work in modern buildings and even in the broad light with the consumer for a spectator. Industry is frequently in opposition to legislation, but here the bakers have demanded laws for bettered conditions of construction, maintenance and health of employees.

THE recognition of the need of throwing protection around the production and distribution of food came years after adequate laws against fraud and sophistication were on the statute books. Indeed it was not until 1912 that the subject of sanitary food production was given more than casual notice by food officials. At the annual convention of the American Association of Food and Drug Officials, held in Seattle in 1912, President Crumbine said, "My own personal judgment is that sanitary food control is the most important matter ever brought before the Association." Following his recommendation, the Association approved a model sanitary law. This law is now on the statute books of practically every state, and where jurisdiction is placed in the Health Departments it is at least partially enforced. Such legislation safeguards the consumer. It is even more helpful in protecting the producer.

The methods of handling raw materials and finished food stuffs have been revolutionized in a decade. Conditions which were common then are intolerable now. No industry has made greater progress toward cleanliness and sanitation than that of the bread baker. Baking as an industry dates back thousands of years. It is a necessity in modern life. For ages the baking industry worked in the dark, in base-

ments, on back streets beyond the sight and ken of the consumer. Bakers as a class were short lived for the conditions under which they worked were not conducive to healthfulness. The modern bakery bears no resemblance to the shop which operated successfully even a few years ago. It has deserted the cellar; it has left the back street and now operates in modern factory buildings, often palatial in their wealth of plate glass and tiling. It has taken over the most prominent corners of the busy city streets, and it does its work in the broad light of day where the consumer can see every process of baking the loaf.

These amazing improvements have come about partly by legislation and partly because the baker now realizes that his industry should take the place of home baking and that that end can never be reached until the housewife is convinced that the bakery is quite as sanitary as her own kitchen, and that the baker's loaf equals that drawn from her own oven.

No small part of the baker's progress has come with the organization of the industry. The baker, in common with other business men, no longer looks upon his competitor as a curse. He realizes that his business will grow only when it commands the confidence of the consumer. Out of this changed viewpoint has come the demand on the part of the baker for legislation and regulation of his industry by health officials. While the tendency in most industries is to avoid and defeat legislation, the bakers, individually and through their state and national associations, are now asking for legislation. The first law of this character was passed in Indiana in 1919 and a study of the law determines definitely the sanitary condition of the modern bakery. The second law of this character has recently been passed in Massachusetts and has just taken effect. The Indiana and Massachusetts statutes are practically identical in character. They differ only when different methods of law enforcement make certain adaptations necessary. They specifically provide that buildings or rooms used for the production or sale of bread or other bakery products, shall be clean, properly lighted, drained and ventilated. The bakery must be provided with adequate plumbing and drainage facilities, including wash sinks, toilets and water closets, and such toilets and closets must be in rooms having no direct connection with the factory, store or salesrooms. The floors, walls and ceilings must be kept in a clean and sanitary condition and all openings into work rooms, including doors and windows, are required to be screened. Under these new laws, the work rooms can be used for no other purposes than those for which they were intended and the old practice of using the bakery as a living and sleeping room no longer obtains. Special rooms are provided for the changing and hanging of wearing apparel and these rooms must be kept clean and properly ventilated.

One of the most important provisions of these laws requires any person intending to work in a bakery to submit to a thorough examination for the purpose of ascertaining whether or not he is affected with any contagious, infectious or other disease or physical ailment. The condition of health of the employee must be shown by a certificate of medical examination and the rules for conducting the examination are set out by the health authorities. It is made illegal for physicians to give a certificate of freedom from disease unless a thorough examination has been made. The Indiana law further provides that any employee who engages in bakery work without first procuring a certificate of health is violating the law.

Is more evidence necessary to show the desire of the baker to maintain a sanitary plant than is manifested in these rigid requirements? Has any other industry asked for legislation which spe-

cifically requires the applicant for a position to determine that he is free from disease? The employee in a bakery, in at least two states, is in a class apart from his fellow workers. The very fact that he is engaged in the production of bread establishes his position as a healthy man.

The character of the material the baker uses requires that his processes be intelligently handled, and the loaf of bread fresh drawn from the baker's oven is, from a sanitary standpoint, a very satisfactory food. The examination of freshly baked loaves shows a low bacterial content, but under the old method of transportation and delivery the loaf was subject to contamination by the dust of the street, by unclean hands, by flies. Modern bakery methods avoid contamination by wrapping the bread in protective coverings of waxed or parchmentized papers. In addition to this provision, in itself adequate, modern legislation requires the wagons, boxes, and baskets in which bakery products are carried, and show cases and shelves from which they are sold, to be well covered, properly ventilated, and protected from dust and flies and always to be kept in a sweet and wholesome condition.

The baker is still using the bread box outside the retail store for receiving early morning deliveries. The bread box is not and cannot be always sanitary, but the desire on the part of the consumer for freshly baked bread still compels its use in many cities. Legislation has, however, established certain conditions under which these boxes may be used. It requires that they are to be constructed and placed so as to be free from the contamination of streets, alleys and sidewalks, and that they be raised at least ten inches above the sidewalk or street level and that no material other than bread shall be placed in the box.

In years past unsold bread could be returned to the baker either to be used by him as animal food or re-sold at a reduced price. Obviously bread so handled is doubly exposed to contamination. It is always stale and sometimes contaminated by mold or a certain bacterial growth technically known as rope. Modern legislation follows the idea first set forth by the United States Food Administration. During its control the custom of returning stale loaves to the bakery was prohibited. In other words, bread once sold remains sold like any other food stuff. This provision has taught the grocer or retailer of bread to buy only such quantities as he can sell, thus saving waste and insuring proper care.

In earlier years, men have assumed their right under the constitution to engage in any business they saw fit to follow. Men who wished to bake bread became bakers. It made no difference whether they knew how to operate a bakery or not. No questions were asked as to where they proposed to bake nor was any regulation thrown around the methods used in the new shop. Today, no new bakery can be established in Massachusetts unless the building plans and the equipment which is proposed to be used have been approved by the local Board of Health. Furthermore, if, after having been opened, the bakery is not properly operated the local health authorities may order it closed. Such legislation as this is constructive in character. It pays to operate any essential industry in accord with the ideas of the health officials. No bread consumer need fear the quality of the loaf which comes to his table if the health authorities are alert. The legislation is adequate, and the desire on the part of the baker to maintain sanitary conditions is fully established by the fact that he himself asked for legislation. The baking industry, at least in the states above referred to, works hand in hand with the health officials, always desirous of employing better operating methods in buildings and with machinery which marks the last word in sanitary progress.

THE WASSERMANN TEST IN THE PUBLIC HEALTH LABORATORY

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Michigan Department of Health,
Lansing, Michigan.

Read before Laboratory Section, American Public Health Association, at San Francisco, Cal., Sept. 13, 1920.

The responsibility for correct Wassermann tests on the part of the public health laboratory can not be over-emphasized. Dr. Kahn discusses the underlying factors governing correct tests, naming five requirements to this end.

THE Wassermann test in a public health laboratory should be of the highest accuracy. The physicians who send specimens for examinations are not often able to talk over the results of a given test with the serologist. In a hospital Wassermann laboratory if the findings do not check the clinical diagnosis there is little difficulty in obtaining another specimen and repeating the test. In a public health laboratory, however, where specimens come from physicians who are scattered over a wide area, the Wassermann results must necessarily be accepted as practically final. It is evident that the responsibility of the public health laboratory in giving absolutely correct Wassermann results, is greater than that of the hospital laboratory. Indeed, this phase, in our opinion, cannot be over-emphasized. Only a few days ago we received, among others, a blood-specimen from a bride who requested that her blood be examined out of regard to her fiancé who had had his examined. The extreme harm resulting from a false report in such, and similar cases, is only too evident.

Unfortunately, there is an element in the public health laboratory which tends to render the Wassermann results less, rather than more accurate. We have in mind the element of time. The laboratory which runs 100 or more Wassermanns a day, six days a week, is obliged to follow a procedure which will enable the staff to complete the tests at a reasonable hour. The average Wassermann laboratory has eight working hours and during this period every phase of the Wassermann test must be completed.

We ourselves, for example, have been under the impression for a long time that state and municipal laboratories could not titrate complement daily because of the delay it involved. We believed that such laboratories should titrate amboceptor instead. This titration, as is well known, can be carried out during the fixation period without in any way retarding the completion of the daily tests. We also believed that the removal of natural amboceptor from the patients' sera as a daily routine procedure was practically impossible because of the delay it entailed.

However, we have long since changed our views regarding these matters, and in the Wassermann laboratory of the Michigan Department of Health we not only remove the natural amboceptor from each and every serum to be examined, but we also titrate both complement and amboceptor daily. Furthermore, we run our Wassermann tests in duplication, employing a cholesterinized antigen with

water-bath fixation and an alcoholic-extract antigen with ice-box fixation, and we titrate each antigen daily both for its antigenic unit as well as its anticomplementary and hæmolytic properties. The results of these titrations (combined with proper controls) can be seen from the fact that out of 8,000 specimens determined during the past four months only five did not check by both methods; or one specimen in 1,600*. In other words, we believe that a public health laboratory can, and should include every possible detail which tends to render the Wassermann test accurate and reliable.

This leads us to the several phases of the Wassermann test which we particularly wish to discuss in this paper. Briefly, we started out with the aim of running Wassermann tests of the highest accuracy, and at the same time, rendering the procedure sufficiently practical so that a reasonable number of Wassermann workers might complete the day's run within an eight-hour period. A complete report of our work will appear elsewhere. In this paper, only the following phases of the Wassermann test will be discussed: (1) The time element in the titration of the hæmolytic system, (2) The daily titration of complement and amboceptor, (3) The removal of natural amboceptor, (4) The daily control system, (5) The importance of running Wassermann tests in duplication.

(1) The Time-Element in the Titration of the Hæmolytic System.—There is perhaps no element in the Wassermann test which is carried out more empirically than the incubation time of the hæmolytic system. Whether one titrates complement or amboceptor, the time of incubation is usually arbitrary. Most workers have adopted one hour as the titration period undoubtedly because Wassermann himself chose to employ this length of time. However, while Wassermann's original technique has undergone numerous modifications, the hour-titration period has remained practically unchanged, as is seen from the descriptions of the method in most text-books.

In our opinion, the incubation period of the hæmolytic system should be no more arbitrary than any other phase of the Wassermann test. This period can be easily determined by considering the Wassermann test as a series of titrations. To present this in outline form, we have in this test the following problem: To find the amount of complement necessary to bring about hæmolysis in a given time of a standard amount of corpuscles

(1) in the presence of amboceptor,

(2) in the presence of amboceptor + unknown serum

(3) in the presence of amboceptor + antigen

(4) in the presence of amboceptor + unknown serum + antigen.

It is evident from this outline that for correct Wassermann tests the time of incubation ought to be the same throughout. Yet it is not uncommon to find Wassermann laboratories where titration No. 1 is incubated one hour in the water-bath, while titration Nos. 2, 3, & 4 are incubated in the neighborhood of 15 minutes, or what is equal to the same thing, the final Wassermann tests are read just as soon as the controls are hæmolyzed, this in many cases, requiring no more than 15 minutes.

This factor of time in the incubation of the hæmolytic system is of such importance in a public health laboratory that we were led to investigate it more fully. Our problem was to find the amount of hæmolysis produced in complement titrations during 15 minutes as compared with one hour incubation. We employed 0.1 cc. of a 5% suspension of sheep-cells, 2 units of amboceptor, and guinea-pig complement (1-10) in gradations of 0.1 cc. to 0.01 cc. We found that if, let us say, 0.05 cc. of complement was the unit

*We consider a strong positive by one method and a weak positive by the other, a check; while a strong or weak positive by one method and negative by the other, is repeated as a matter of routine.

after 15 minutes incubation, 0.04 cc. was the unit after an hour's incubation; and if 0.04 cc. was the unit at the end of 15 minutes, 0.03 cc. was the unit at the end of an hour. In 60 such tests we found practically without exception that the difference between 15 minutes and one hour incubation was nothing more than one point in the complement gradation. This led us to standardize the incubation time of the hæmolytic system to a 15 minute period. We read our complement and amboceptor units respectively after 15 minutes incubation, and we read our final Wassermann tests just as soon as the controls hæmolyze, which takes in practically every case about 15 minutes. This 15 minutes standardization of the hæmolytic phase of the Wassermann test is, in our opinion, not only scientifically correct, but highly desirable for a public health laboratory.

(2) The Daily Titrations of Complement and Amboceptor. — Having adopted a 15 minute incubation period for the hæmolytic system, the long-disputed question as to whether to titrate complement or amboceptor in the Wassermann test, is practically eliminated, since either one of these titrations can be completed in 20 minutes. Indeed, it takes only from 3 to 4 minutes to set up either a complement or amboceptor titration and with 15 minutes incubation, one can determine the unit of complement or amboceptor in less than 20 minutes.

In this laboratory, we titrate both complement and amboceptor and we find it entirely worth while. Furthermore, we consider the obtaining of a correct complement unit of such importance, that two workers carry out complement titrations independently of one another, and if these titrations do not check, they are repeated. Two units of complement are employed in the tests. And during the fixation period, we titrate our amboceptor, using the two units of previously determined complement, as the constant. Although the potency of amboceptor is relatively uniform, we nevertheless find that not infrequently we have to change our amboceptor dilution to bring it up to two units, thus proving the importance of these titrations.

It might be added that the titration of the hæmolytic system in the presence of antigen cannot very well be carried out in a public health laboratory, since, in order to carry out such titrations properly, one has to include primary incubation or fixation periods at the same length of time and at the same temperature as carried out in the tests. Thus, according to our procedure, the complement titration with cholesterinized antigen would have to be given a half-hour fixation period in the water bath, and the complement titration with the alcoholic antigen, 4 hours in the ice-box.

Neither is there any advantage in adding pooled negative sera to complement titrations, since the sera employed would necessarily have to be those left over from the tests—in other words, comparatively old—and, as is well known, the older the serum, the more complement it absorbs. It is questionable, therefore, whether the complement absorption of such pooled sera would represent the amount of complement absorbed by comparatively fresher sera, employed in the tests. In our opinion, the daily titration of both complement and amboceptor and the employment of two units of each, is, in so far as our present knowledge goes, the ideal procedure for a public health laboratory.

(3) The Removal of Natural Amboceptor from Human Sera.—Although it is well established that the presence of natural amboceptor in human serum interferes with the accuracy of the Wassermann test, (guinea-pig complement, sheep-cell system), yet to our knowledge, there are but few state and municipal laboratories which remove this amboceptor as a routine daily procedure. The reason, as was pointed out above, undoubtedly lies in the fact that any of the established methods for removing natural

amboceptor is altogether too time-consuming to be applied routinely where 100 or more Wassermann tests are run daily.

We approached this problem by studying the rate of absorption of amboceptor by 0.05 cc. of packed sheep-cells (approximately 1 drop) at room temperature. Mr. D. S. Lyon, who investigated this phase of the work in this laboratory, added a drop of packed sheep-cells to a series of 6 tubes each containing 400 units of amboceptor and permitted the extraction to take place at room-temperature for the following periods:

1st tube for 5 minutes
2nd tube for 10 minutes
3rd tube for 15 minutes
4th tube for 20 minutes
5th tube for 25 minutes
6th tube for 30 minutes

The period of extraction was stopped in each case by rapid centrifugation and titrations were immediately carried out to determine the amount of amboceptor left of the original 400 units.

The results were very significant. It was found that an ordinary-sized drop of packed sheep-cells actually absorbed over 80% of the 400 units during five minutes extraction. These experiments were repeated with pooled human sera to which were added 0.01 cc. amboceptor-serum containing also 400 units, with similar results. This problem is still under investigation. This, however, we believe to have established, namely, that an ordinary-sized drop of packed sheep-cells will extract in five minutes at room-temperature as many as 350 units of amboceptor.

This finding suggested the following routine procedure for the removal of natural amboceptor from human sera:

(1) A concentrated sheep-cell suspension, previously packed down by centrifugation, is added to inactivated sera in the proportion of 1 drop to 1 cc. of serum, mixed and permitted to extract for 10 minutes at room temperature.

(2) The sheep-cells are then thrown down by centrifuging at high speed, and the clear supernatant serum is ready for use.

This simple procedure, applied to about 100 tests, can be completed in from 30 to 40 minutes, and in our opinion, considerably simplifies the problem of removing natural amboceptor from human sera.

It might be added that we have tested the efficacy of this procedure in the following manner: After fixation of complement by serum and antigen, sheep-cells were added (without amboceptor) and incubated in the water-bath at 37° C. for 10 minutes. Natural amboceptor, if present, would thus have had ample time to produce hæmolysis of the cells. However, we have not observed a single instance of hæmolysis in over 300 such tests carried out at different times. Neither have we found any indication of anticomplementary properties developing in the sera after this short extraction period.

(4) The Daily Control System.— We employ a simple daily antigen titration which helps us greatly in checking the correctness of our Wassermann results. To begin with, we standardize our cholesterinized antigen to contain from 2 to 3 antigenic units only. This is done because of the generally established fact that the cholesterinized antigen has a tendency to pick up false positives. Our alcoholic-extract antigen, on the other hand, is standardized to contain from 8 to 10 antigenic units. These standardizations in the case of new antigens, are carried out daily for a week with different pooled positive sera and are finally employed in the test only after the antigenic unit is sufficiently removed from the anticomplementary and hæmolytic units. After this is accomplished and the dose of antigen to be used in the tests decided upon, we employ the following five-tube antigen titration:

Tube No. 1. Contains regular dose of

antigen + standard amounts of complement and pooled positive serum.

Tube No. 2. Contains half the dose of antigen + same amount of complement and serum.

Tube No. 3. Contains one-quarter of the regular antigenic dose + same amounts of complement and serum.

Tube No. 4. Contains four times the antigenic dose with standard amount of complement (anticomplementary control).

Tube No. 5. Contains four times the antigenic dose without complement (hæmolytic control).

These five tubes are incubated one half hour in the water-bath, in the case of the cholesterinized antigen and four hours in the ice-box, in the case of the alcoholic antigen, after which sheep-cells and amboceptor are added to each of these tubes as to all the regular tests, and hæmolysis observed, after water-bath incubation.

Now, in the case of the cholesterinized antigen, tube No. 3 containing a quarter of the regular antigenic dose, is expected to show partial hæmolysis, since we employ no more than 3 antigenic units. In the case of the alcoholic antigen, on the other hand, tube No. 3 must show as complete complement binding as tube No. 1 with a whole antigenic dose. Tube No. 4 is to test the anticomplementary properties of the antigen. This tube contains four times the antigenic dose and it should not by itself absorb sufficient complement to delay hæmolysis. Tube No. 5 is to test the hæmolytic properties of the antigen. Four times the antigenic dose must not produce the faintest trace of hæmolysis. Thus, in the routine Wassermann tests, we get a daily picture of the relation of both one-fourth the antigenic dose and four times the antigenic dose.

Superimposed on this antigen titration we also add to our daily tests a pooled 4+ control, a pooled negative control and a doubtful control. This latter doubtful control is of particular help to us; we consider a doubtful Wassermann test about half way between a one plus and a negative, and we expect this doubtful control to show about the same amount of complement binding from day to day. The appearance of these doubtful controls often gives us a clue as to how some of the "borderline" tests are to be read. Thus, if on a given day the doubtful control appears more like a one plus than a doubtful, we consider our system slightly "slow" and when we are in doubt whether to read a given test two plus or three plus, we read it two plus. If, on the other hand, the doubtful control is very weak, we consider our system slightly "fast" and we read our "borderline" tests accordingly.

It might be added that this control system is carried out aside from the regular antigen controls which consist of two antigen tubes (without serum) for each 9 tests.

(5) The Duplication of the Wassermann Test.—No matter how large a number of special titrations and controls one may employ in the Wassermann test, we nevertheless believe that in a public health laboratory, the tests should be run in duplication. Thanks to the extensive studies of Kolmer and his co-workers on the manifold factors which enter into the Wassermann test, we now know more about the underlying conditions which govern correct Wassermanns than we ever did before. However, the Wassermann test, as is well known, is not a chemical test, but a biological test. Indeed to this day, we do not know whether we are dealing in this test with an immunity reaction or a bio-chemical reaction. We therefore believe that the public health laboratory should at least run Wassermann tests in duplication, with as many variations in the procedures as possible. We believe also that the antigens employed should be from two different sources. In this laboratory we employ a cholesterinized antigen of pigs' hearts

and an alcoholic extract antigen of beef-hearts. And whenever the tests do not check with both antigens to the extent that one is a two plus, three plus or four plus and the other negative, the test is repeated.

To summarize, we believe that the public health laboratory:—

(1) Should titrate complement and amboceptor daily.

(2) Should remove natural amboceptor from serum as a routine procedure.

(3) Should obtain a daily picture as to the behavior of the antigens.

(4) Should include a doubtful (±) in its control system.

(5) Should run the Wassermann tests in duplication with two antigens coming from different sources.

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FACTORS THAT INFLUENCE INFANT MORTALITY

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Read before the Vital Statistics Section in joint session with the Child Hygiene Section, American Public Health Association, at San Francisco, Cal., Sept. 15, 1920.

In Florida infant mortality increases with the birth rate. Midwives with superstition and ignorance constitute a source of danger, conditions of labor probably contribute somewhat, while insanitary conditions of the home and its surroundings are unfortunate factors. While the rates both for white and for colored population are below those of the Registration Area, they call for processes of betterment.

THE infant of today will be the citizen of the future. It behooves us then to give first place to the care and well-being of our nation's greatest asset.

The number of babies dying in Florida last year before reaching the age of one year was 1,659. This gives a rate of 89 per 1,000 reported births as compared with the Registration Area rate of 94, in 1917.

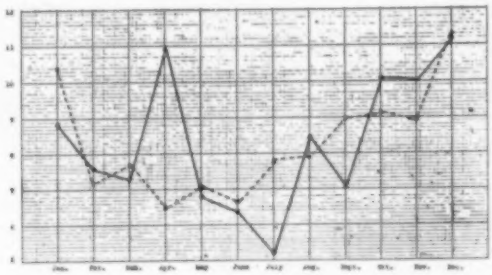
It would appear that conditions in Florida are favorable. The white infant mortality rate in Florida is 72, as compared with 91 for the Registration Area; and the colored rate 126, as compared with 149 in the Registration Area. While it is gratifying to note that the infant mortality rate in Florida is lower than the latest published rate for the United States Registration Area, we fully realize that entirely too many short coffins are required each year, for a large percentage of the baby deaths would be prevented if our present knowledge of the care of the baby could reach all parts of the state.

The purpose of this paper is to bring out some factors that play an important part in influencing infant mortality, particularly in Florida, where climatic and other conditions are quite different from states farther north.

Referring to Chart No. I, we find the percentage of deaths for the year decreasing from January to July, with the

exception of the colored population during the month of April, and increasing steadily to the end of the year. Color plays an important part in Florida, owing to the fact that it comprises over 40% of the population. The percentage of deaths of colored infants shows an increase for April and a marked decrease for July.

CHART 1

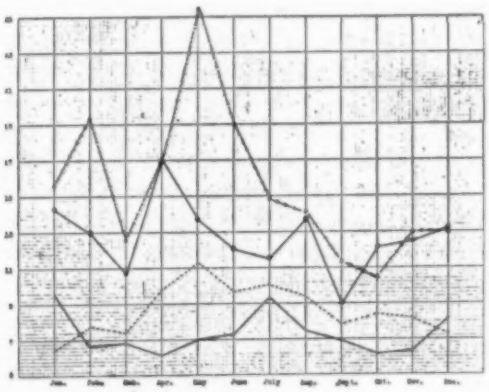


A comparison of the percent of white deaths with percent of colored deaths of children under one year for 1919 by months.

White x------x
Colored o--------o

Chart No. 6 shows the highest infant mortality rate for the month of May. The birth rate for the colored is not high for April or May, but on the other hand is below normal.

CHART 6



A comparison of the monthly infant mortality rate for 1919 with 1917 by color.

White, 1919 ————
White, 1917 - - - - - -
Colored, 1919 o--------o
Colored, 1917 x-x-x-x-x-x

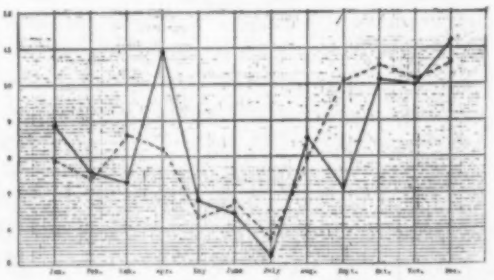
A study of the causes of death among infants for April reveals the fact that syphilis, tetanus, pneumonia and influenza are higher for the colored than for the white. Diseases of early infancy together with diarrhœa and enteritis, play an important part in infant mortality, but does not explain why April and May should go so high for the colored. We have not a large number of years for comparison and therefore cannot make a statement as to whether or not this is unusual.

In many parts of the state colored women are employed to dig the enormous potato crop which is harvested during the spring of the year. The diggers travel long distances in auto trucks and many camp nearby until the end of the season. All children who are able to work follow their mothers, and of course the little babies are very much neglected; not only improperly fed, but irregularly and often under-fed.

The low percentage of deaths among the colored babies for July, is largely due to the low birth rate, as shown on Chart No. 3. Very many of these babies are taken soon after birth, so that the number of births influences the number of deaths.

From mid-year to November, the percentage of births increases and in almost

CHART 3



A comparison of the percent of colored births with the percent of colored deaths of children under one year for 1919 by months.

Colored births x------x
Colored deaths o--------o

like proportion the percentage of infant deaths increases. Towards the end of the year, however, we begin to notice an increase of deaths from malaria—this cause alone was responsible for 34 of the deaths last year of children under one year of age, which is 2% of all infant deaths.

"Dr. W. H. Deadrick found that children are more frequently and more severely afflicted with malaria than adults, and that it was probably due to their delicate skin and manner of dress, sounder and more prolonged sleep and inability to defend themselves against mosquito bites."

Dr. Charles F. Craig states that "Observations made in Africa by Koch regarding malaria in native children proved conclusively that in malaria regions a very large proportion of infants and children show the malaria plasmodia in their blood, even though no symptoms of the disease be present, while in the majority of instances the blood of adults does not show any trace of malaria infection. From his findings he concluded that the adult natives in the tropics are immune to malaria because of having suffered from repeated attacks in infancy and childhood.

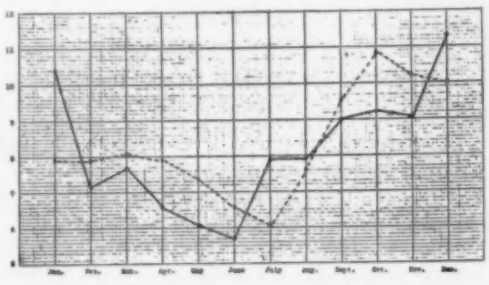
"In West Africa, Koch found that 100% of the children under two years of age showed malaria plasmodia, and that the percentage of infections decreases with advancing age." We may safely assume then, that malaria influences the infant mortality in Florida, where many parts of the state are infected with mosquitoes and many of the houses are not screened.

Thirty-nine percent of births last year were attended by midwives, and 78% of the colored mothers did not have a physician during confinement.

While we have more than one thousand midwives, there is no law governing their practice, and it is not surprising to find that 53% of the infant deaths last year were reported as occurring from tetanus, convulsions, diseases of early infancy, causes unknown, etc.

Dr. Wm. McDonell, the City Health Officer for Jacksonville, requires midwives to pass an examination and receive a license before practicing in the city. It would be well to have a discussion on the midwife problem, and what steps should be taken in passing laws that will meet the situation. Education is of course vitally important but will take time. A law that would be ideal at some future date might be impracticable if put into effect at once.

CHART 2



A comparison of the percent of white births with the percent of white deaths of children under one year for 1919 by months.

White births x------x
White deaths o----------o

A considerable proportion of midwives in addition to being ignorant as to sanitary and proper methods, are very superstitious, and often insist on ridiculous performances. A baby died recently and an investigation revealed the fact that a midwife had tied the cord with a piece of an old dirty skirt. Quite a number of the midwives cannot read or write, so it is not surprising to find them doing many things that even an intelligent mother would not think of doing.

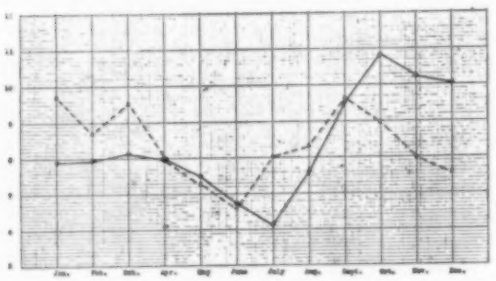
A set of midwife safety rules together with a prophylactic package has been put into the hands of every midwife in the state to be followed up with literature and other educational propaganda.

The United States Public Health Service pamphlet, "Care of the Baby,"

is mailed to every new mother just as soon as the birth certificate is received by the Bureau of Vital Statistics. These points are brought out not to advertise what we are doing but to solicit an exchange of practice so that we may have the benefit of what you are doing and thereby improve our own work.

Chart No. 2 shows the percentage of white deaths by months as compared to the percentage of white births by months, and bears out the same principle among the whites as referred to among the blacks, i. e., that a high percentage of births is followed by a high percentage of infant deaths.

CHART 4



A comparison of the percent of white births for 1919 with the percent of white births for 1917 by months.

White births, 1919 o————o
White births, 1917 x------x

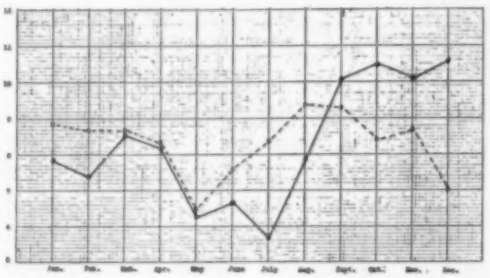
Assuming that 1917 was a normal year, Chart No. 4 and Chart No. 5 show a higher percentage of births at the first of the year for 1917, while 1919 shows a higher percentage of births towards the end of the year. This was caused partially at least, by conditions due to the war and the influenza epidemic. Many expectant mothers were taken during the fall of 1918 and a great many miscarriages caused by the effects of influenza. A large number of our young married men and men of marriageable age, were taken from their homes. It is to be expected then that the percentage of births during the early part of 1919 should show a decrease.

Chart No. 1 shows an increase in infant mortality after September, which would indicate that the children of the family starting their school year carry home to the babies certain communicable diseases.

While in some states the cold weather would play an important part after September, in Florida we have very little cold weather before the first of the year.

Fifteen percent of all babies under one year of age, died from diarrhœa and enteritis, the only other cause equaling being "diseases of early infancy."

CHART 5



A comparison of the percent of colored births for 1919 with the percent of colored births for 1917 by months.

Colored births, 1919 o————o
Colored births, 1917 x------x

Again referring to Chart No. 6, it will be seen that the infant mortality rate is higher during the summer months.

On account of a mild climate we might say that the fly season is the year around. There are, however, more flies during the summer. The open back privy plays an important part and has not been overlooked by the State Board of Health, through the Sanitary Engineering Bureau. If all houses in the state were properly screened and when not connected with sewer, had an approved type of sanitary privy in use, there would be an important reduction of infant deaths from diarrhœa and summer bowel complaints. A few dollars spent in the right way in this line will prove a money saver in the future, as well as lessening the sorrow and suffering of many innocent families.

Insanitary conditions of the home and

lack of proper ventilation play an important part. A great many of the houses built around logging camps do not have windows and when closed up at night have no ventilation. The fact that there is very little cold weather makes the heating of the house and the clothing of the baby less important, as it is possible to leave the doors and windows open all day, or have the baby out of doors twelve months of the year. The old custom of shutting the windows and closing the doors tight in order to keep out the night air is still a custom in some communities, particularly among the negroes, and affects the health of the babies, especially when several persons sleep in the same room. The only night air to be feared is last night's; open up and have fresh air.

A summing up of the factors that influence infant mortality in Florida may be stated as follows:

Midwives with their superstition, lack of education and training.

Diseases classified; as, of early infancy, tetanus and ignorance and lack of care.

Insanitary conditions of the home and its surroundings which affect the death rates from diarrhœa and summer bowel complaints.

Malaria in certain parts of the state is also an important factor.

The percentage of infant deaths increases with an increasing percentage of births.

The mild climate is a factor in reducing the infant mortality rate as it is possible to keep the baby out in the fresh air most of the time and offsets some of our handicaps.

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Mental Hygiene.—That the importance of mental health is being recognized is made evident by the frequency with which this subject is now considered at meetings devoted to public health and hygiene. The importance of mental hygiene also becomes obvious when it is realized that Massachusetts supports 12 large state hospitals for the insane. There are approximately 15,000 patients in these hospitals. More than 3,000 new patients are admitted every year. It is estimated that one out of every 259 inhabitants in the state is at one of the state hospitals for the insane. The cost of maintaining these hospitals in 1919 was over $6,000,000. This was equivalent to one-half of the state tax, and more than one-fourth of the state expenditures. The magnitude of the problem is hardly realized. In addition to those under treatment at the state hospitals for the insane, there are 2,500 patients at two schools for the feeble-minded maintained by the state. It is estimated that there are over 12,000 feeble-minded persons in Massachusetts. These obviously mentally defective people do not include the large number of people who are suffering from "nervous prostration" or "neurasthenia" or minor psychoneuroses.

Most of these psychoneuroses can be materially benefited by proper treatment if recognized in the incipient stages. Parents and physicians should be particularly able to recognize early symptoms of mental ill-health and to recommend methods for cure. Sometimes the lack of adjustment of the individual may be overcome by a change of school, a new job, more recreation, new interests, a complete change in environment, proper sex knowledge, or a good talk with a trusted physician or an intelligent friend. It is important to bear in mind, however, that even though an individual cannot pass modern intelligence tests, or be 100% efficient mentally, he may not be necessarily a case for institutional care. Many people are decent and self-supporting even though they might technically be considered as mentally defective. Such people should also have "the right to liberty and the pursuit of happiness."—Dr. Walter E. Fernald, *Boston Med. and Surg. Jour.*, December 30, 1920. *(M. P. H.)*

SYMPOSIUM ON MENTAL HYGIENE

I. PUBLIC HEALTH EDUCATION AND MENTAL HYGIENE

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Associate Medical Director, The National Committee for Mental Hygiene, New York City.

Read before the Sociological Section, American Public Health Association, at San Francisco, Cal., Sept. 16, 1920.

THE public health program is a very full program, and if there are those who urge additions to it, it is right that they should be required to show that a real need exists. Is there, for example, a need for active propaganda in regard to mental health or mental hygiene? I shall not worry you with long lists of figures, but in this connection there are one or two things I should like to call briefly to your attention.

On January 1, 1920, there were 232,680 patients with mental disease in institutions in this country. Insane patients in almshouses, penal institutions, and reformatories are not included in the figures.

There were in addition 18,000 patients on parole or otherwise temporarily absent from hospitals. Including those on parole, the number of mental patients in hospitals approximates the number of students in all colleges and universities in the country. Some 60,000 new patients are admitted annually to these hospitals. By new patients I mean strictly patients admitted for the first time. Some 30,000 people die annually in hospitals for mental disease.

Since 1880, the general population of the country has increased 110.8% and during the same period the number of patients with mental disease in institutions has increased 468.3%.

The average annual per capita cost of caring for patients in mental hospitals is $250, making a total cost of about $60,000,000 a year. To this sum should be added, of course, the economic loss through the withdrawal into these institutions of about 75,000 persons each year.

The number of beds in this country for mental patients approximates the total number of beds in all general hospitals of the country. This is indeed a striking fact that the number of beds for the care of one group (the committable insane) of one type of patient (nervous and mental) approximates the total number of beds in all general hospitals.

With the situation as it is, is there a sufficient lack of general information in regard to these facts and to the causes which bring about such a condition to warrant more attention being given them in an already crowded program of public health education?

Professor Donald A. Laird of the University of Iowa last year sent out a questionnaire to some 200 intelligent people in his community. Professor Laird wanted to find out what might be the views of intelligent people today on certain questions in regard to nervous and mental diseases. These questionnaires were not sent out indiscriminately. They were sent to professors, to social workers, to physicians, to lawyers, and to teachers. If members of any group in a community should be well informed about these matters, surely they would be found in the groups selected by Professor Laird. And yet it was surprising to find that a very large proportion of these intelligent people still held the notion that to be insane was to be disgraced. A very considerable number of these intelligent people still were of the opinion that all, or practically all, the so-called insane were dangerous individuals, and they were quite sure they would be afraid of one, or afraid if one where known to be in the vicinity. The question was asked

as to the cause of mental disease. There were a great variety of answers, and it was surprising to find a considerable number who still felt that in some way or another insanity or mental disease was a punishment from above. Not a few were not aware that the state of Iowa made any provision for the care of mental patients. When asked to whom they would go if they believed they were themselves mentally ill, or a member of the family were mentally ill, the majority did reply that they would seek the advice of their physician; but there were others who would first advise with their attorney, or with a lawyer, and a considerable number who would first consult their minister or their priest. Now if what Professor Laird finds true in Iowa is true elsewhere—and one knows all too well that it is—then certainly there is much need for public education along these lines.

Let me go back for a minute to the matter of numbers and let me put these to you in a little different way. I caution you that you will probably feel that I am overstating the situation, but the figures I shall give you are as accurate as it is humanly possible to obtain. They are not the result of my own amateurish attempt at statistics, but are based upon the careful professional census made periodically by the Bureau of Statistics of The National Committee for Mental Hygiene.

When we say there are 60,000 new admissions to the state hospitals of the United States each year, the significance of the statement is not readily grasped. The number is difficult to visualize. Let us therefore take for a moment just the admissions to the hospitals on the Pacific Coast, that is, the hospitals of Washington, Oregon, and California. Last year there were admitted to these hospitals 3,962 new patients. Let us call it 4,000. What I want to point out is this, and it is a thing which we do not seem to realize. These people, these 4,000 people who are going to enter the hospitals next year, and the 4,000 who are going to enter year by year—and let me say the number increases each year rather than decreases, so that we can make an estimate in advance, and still be underestimating rather than overestimating—are not an unknown group that will descend suddenly upon these coast states like a plague from some far off place and from some unexpected direction. They are our neighbors, our friends, and their children. They are not a group peculiar to Massachusetts, or New York, or Florida, but citizens and children of San Francisco, of Berkeley, of Oakland, of Los Angeles, of Seattle, and of Portland. The course of the 4,000 that are to enter the hospitals this year is about run, and they will soon be with us. But in the offing there is another 4,000, and, as far as we can see, yet another and another. It is a veritable army of living, breathing, unhappy individuals—4,000 within one year of hospital care; 8,000 within two years; 12,000 within three years; 20,000 within five years; 40,000 within ten years.

Some that we can see just over the horizon are mere toddlers who are today having their first brush with what is to them a surprisingly unfriendly environment and reacting to it badly and in a manner that is significant; nearer is the boy or girl just beginning to edge away from the crowd; the boy who has just found the false way around an obstacle; the lad who is beginning to doubt himself, but who is finding an explanation of his failure in the unfairness and unfriendliness of others; the boy or girl who today has just dropped his or her head in unhappy recognition of his or her inferiority, or the other fellow in the group who has just thrown up his head, frightened at the inadequacy he has found within himself, but who has buckled on an armor of self-defense, stands breathing defiance and ready to challenge authority. With increased puzzlement and confusion, misery and un-

happiness, pitiful and tragic, these boys and girls will be moved along toward us year by year. Inefficiency, failure, and humiliation will be heaped upon them. As, without understanding and without guidance, they are pushed forward by the crowd about them, it will be but an accident whether some first reach us or the prisons. But in the years that are to intervene parents will labor with them, the schools will work with them, the judges of the juvenile court and the probation officers will do the best they can with some, and with some the higher courts, reformatories, and prisons will have to take a hand. Energy and money will be expended without avail upon them. But whatever the intervening steps, the end is failure. How difficult of readjustment they will be when once they reach the reformatory or finally find a refuge with us! And yet, pliable as they are today, how simple in many cases would the readjustment be now—how simple the psychiatrists who met yet more difficult problems of readjustment in the army know, and Campbell and Richards in Baltimore, Glueck and Brown in New York, Healy and Bronner in Boston, and Dr. Read and Dr. Bronner here in San Francisco, who in school or in court have worked with these children, have pointed out. We are inclined to think of these individuals in the terms of end reactions as we see them on their admission to the hospital, and to be discouraged; it were better did we think of them in the terms of beginning reactions.

Until this situation is brought under control, hygiene must not puff itself up or be too proud in spite of the great victories that have been won in other directions. In meeting the issues involved in the problem of nervous or mental disease, two notions, quite generally current, must be met at once. The first, that all are created equal. I think this need not be discussed at any length here for surely there is no one in this audience of public health workers who believes that individuals are born equal, either physically or mentally.

The other is the implication in a "sound mind in a sound body." It is not true that a sound body means a sound mind. Nobody, probably, believes it to be true. But public health organization, education, and propaganda would seem to be planned on the assumption that it is true. A neurotic patient is neurotic whether he has malaria, typhoid, tuberculosis, or hookworm, and while his infectious ills will add to his burden, his neuroticism is seldom, if ever, dependent upon it, and cleansed of his infection, he still remains neurotic.

Conceive a bright, sensitive little chap in the grade school. His adenoids and tonsils are of the most approved model; his nutrition is good; he has no congenital syphilis; it is not possible for him to contract any infectious disease because since before he was born, these diseases had been wiped from the earth and are now but medical curiosities. There is no reason why the boy should not develop into a young Apollo. But he will not. Because of bad mental habits begun in early childhood in his millenially healthy home and fostered in his perfectly ventilated school he is headed straight for social and economic perdition. And nothing in the present plans of the Federal Public Health Service, the American Public Health Association, or the State or County Boards of Health will save him. In ten years he will be a permanent charge upon the State and for an indefinite time. For him and thousands like him, the State will maintain expensive hospitals. The State will lose the possible social and economic contribution to the life of the community it expected when it planned its expensive campaign to keep him physically healthy; it will lose the amount it invested in its carefully, but none too wisely planned education. Instead the State will pay out other large sums, over a period of probably twenty or thirty years, in housing him,

clothing him. feeding him and in salaries to a corps of physicians, nurses and attendants to look after him. And this expenditure will not be an investment. It will no doubt be a dead loss. Its only excuse will be to ease the conscience of the community for the avoidable ill the community in its lack of wisdom and foresight let fall upon him. It will be a credit to the community's heart, not its head.

The greatest need in the field of mental hygiene is for a better understanding of the individual and of the significance, both in a social and personal way, of individual reactions to the events of everyday life. These reactions are important in all walks of life, but are particularly important in relation to certain major social problems which so frequently involve the mentally defective or diseased, the psychopath and the mentally and nervously unstable. In order that organizations and authorities, dealing with the individuals who create these problems, may have access to such expertness in these matters as exists in a community, it is necessary (1) that such facilities for the study of asocial individuals as exist be made more accessible. This can only be done through the passing of laws by the state legislatures that will permit voluntary and temporary care admission to state hospitals and provide for temporary commitment to such hospitals for the purpose of observation. Such laws (now on the statute books of many states) are of inestimable value to workers in all fields of social work and workers should be sure that they are familiar with them; (2) that the facilities for the study of asocial individuals be very greatly increased. These facilities are the psychopathic hospital, the psychopathic wards of general hospitals, the psychiatric clinics in connection with courts, prisons, and reformatories, the out-patient departments of state hospitals, the community mental hygiene clinics in communities where none of the other facilities exists, and psychiatric social service in connection with all; (3) that the facilities for the training of those who are to undertake the study of the asocial individual be increased. This means an increase in the amount of time given to the teaching of psychiatry in the medical schools, social psychiatry and mental hygiene in schools of social work and normal schools.

Our knowledge of the individual, his personality and character, and of those forces, within and without, which, playing against each other, turn a social into an asocial individual, is not, of course, complete, but there exists a body of facts that is of tremendous value in meeting the practical issues involved in social problems. Research along these lines must be continued and facilities for such research increased, but in the meantime, much will be gained by a wider dissemination of our present-day knowledge among those groups and organizations dealing with the individual in connection with one form or another of social problem. A closer contact should be developed between these groups and organizations and those in the community—the psychiatrists—whose professional work brings them this special knowledge. This can be accomplished by psychiatrists accepting positions advisory to local groups and organizations.

One fundamental principle should be kept in mind by all who are dealing with the individual and social problems. In a personal crisis the particular thing that has happened to an individual is not necessarily the most important factor in the situation—rather, the individual and personal mental reaction of the person to that thing. An individual is prone to feel that the crisis in his own life is unique; that no one ever had to meet just such a situation. But the chances are that the situation is not unique, that very many have had to face exactly the same combination of circum-

stances. A crippling accident, the development of a dread chronic disease, the loss of a fortune or of a loved companion, disgrace—these are not the crux of the situation, but the individual reaction to them. And each individual will react differently. The permanence of any particular experience, its final impression on the personality and character of the individuals, *and whether the situation will develop or is likely to develop consequences of a social nature likely to be important and probably of very great importance to others than the individual (to the social group)* will depend upon the forces at work in the personality make-up of the individual. It is of the greatest social importance, therefore, that the elements which go to make up the personality and character of the individual be understood and that when crises become unmanageable or are likely to bring social consequences there be at hand agencies capable of rendering expert assistance.

No other group of diseases affects so fundamentally social life. Their very nature makes this so. In no field are greater responsibilities placed upon the physician. The problem of nervous and mental disease and the social problems associated with them are in large measure controllable. It need not become necessary for 60,000 new patients to enter the hospitals each year; it need not be necessary for the states to expend $60,000,000 each year for the maintenance of patients; the progress of the average child in school need not be interfered with by the mentally defective child; courts and reformatories need not forever be hampered by the psychopathic repeater. This day there exists sufficient knowledge upon these subjects to make an appreciable attack upon these conditions. It is not lack of technical knowledge that impedes, but lack of diffusion of this knowledge in the community. Diffusion of this knowledge is a responsibility of agencies for public health education.

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Developing Plants to Help Fight Leprosy.—The Bureau of Plant Industry of the U. S. Department of Agriculture is now at work developing plants which produce the chaulmoogra oil used by the U. S. Public Health Service in its fight against leprosy. True chaulmoogra oil is obtained from the seed of a tree known as *Taraktogenos kurzii*, which grows in Burma. Three other trees have also been found by scientists to yield a similar oil from their seeds. They are the *Hydnocarpus anthelmintica*, *H. wightiana*, and *H. heterophylla*. In 1904 the physiologically active acids were separated from the seeds of the first two trees. These acids, designated as chaulmoogric and hydnocarpic acid, respectively, were identified with the corresponding acids of true chaulmoogra oil. The ethyl esters of the acids, which is the form in which the remedy is used by the Public Health Service, were also developed about the same time. Seeds of the hydnocarpus have recently arrived at the Bureau of Plant Industry from Siam. They will be sent to Florida, Porto Rico, and Hawaii to be propagated. While the medical treatment of leprosy has so far been with the true chaulmoogra oil, the hydnocarpus may produce seeds which will also be of great value in this connection, and it is for such possible use that the trees will be grown.—*(J. A. T.)*

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Not too early to be thinking about the Fifteenth Annual Meeting of the A. P. H. A. in New York City, November 14-18, 1921.

SYMPOSIUM ON MENTAL HYGIENE
II. RELATION OF PSYCHIATRY TO PUBLIC HEALTH

EVA CHARLOTTE REID, M.D.,
San Francisco, Cal.

Read before joint meeting of Public Health Administration and Sociological Sections, American Public Health Association, at San Francisco, Cal., September 17, 1920.

Dr. Reid argues that if the medical profession had performed its duty by the mind as well as the body, Mrs. Eddy would not have been heard of outside of New England. Prevention and treatment of mental deficiency are problems for medical men, and the sooner this is realized the better for both community and profession.

DR. WILLIAM A. WHITE has very aptly remarked that Hygiea, the goddess of health, was the daughter of Æsculapius, the god of medicine. If preventative medicine had a goddess it would be recorded that she was the daughter of Hygiea and that she was born about the middle of the nineteenth century. Mental hygiene is the last branch of preventative medicine to receive attention. It would seem, therefore, that the problem of preventative medicine had been approached from the wrong end. The success of any project for the promotion of public health depends primarily upon the psychological attitude of the individuals in the community. This is particularly true in regard to the prevention of venereal disease, tuberculosis, malaria, yellow fever, hookworm and typhoid fever.

The mentally afflicted, the most helpless of all sick, have long been the neglected stepchildren of the medical profession. Long after the profession had educated the public to the point where they were building beautiful hospitals, well-staffed and well-equipped for the care of the physically sick, the mentally sick were still being cared for in jails, penitentiaries and poorhouses. Following this era came the period of state hospitals, politically controlled. For half a century the mentally sick were considered the legitimate prey of the politician. Superintendencies of state hospitals were given out as awards to men who were medical failures, but political successes. These men in turn installed all their political friends in positions of importance in the institutions, irrespective of qualifications or experience. We are now emerging from this era as far as hospitals are concerned, but in nearly every state the mental cases are still being handled by the sheriff and his deputies before they reach the hospital.

It is a strange fact that in America all the epoch-making reforms in the care and treatment of mental cases have been initiated by the laity and not by the medical profession. Among these reformers may be mentioned Mrs. Packard of Illinois and Dorothy Dix, who was instrumental in having, in twenty states, the mental cases taken from jails and placed in hospitals; also Mr. Clifford Beers, who was instrumental in founding the National Committee for Mental Hygiene, engaged in the betterment of the condition of these unfortunates.

It is only recently that psychiatry has been given a place in the curriculum of the medical school, and in most schools instruction in that subject is still hopelessly inadequate. I do not know of a single medical school that mentions psychology as a premedical requisite. "Whatsoever a man soweth that shall he also reap," says the Bible. The neglect of psychology and psychiatry by the medical profession has proven a boomerang

that has returned, bringing with it humiliation, loss of prestige and money. The church attempted to fill the long felt need of humanity which medicine ignored, with what result we all know. If the medical profession had done its duty by the mind as well as by the body of man, Mary Baker Eddy would never have been heard of outside of Massachusetts. Every year the medical profession of California spends large amounts of time, energy and money to combat destructive legislation which is being pushed by a dozen sects and creeds, —anti-vivisectionists, anti-vaccinationists, anti-school examinationists and anti-everything that makes for the promotion of public health. The ever increasing strength of these cults is the direct result of the fact that the medical profession has persisted, and still persists, in ignoring the great fact that the mind can influence the body.

The importance of the subject of psychiatry to the health of the nation was shown during the recent war. In the causes of rejection of applicants for admission to the army and navy, nervous and mental disease stood fourth on the list. Besides those rejected, 72,000 unwounded men were useless in the army because of nervous and mental affections.

With the exception of nine, every state in the Union shows a steady increase in mental disease in proportion to the population. In one state the proportion has quadrupled in ten years. The burden of supporting the institutions for the mentally defective and diseased is yearly growing greater, and the time is coming when the public will demand from the medical profession some solution of the problem. In addition to $50,000,000 spent yearly in the United States for the care of these unfortunates, a large part of the budget of every state, county and city goes to the support of institutions for those who constitute the "social problems," — the indigent, the delinquent, the criminal, the venereally diseased, whose ranks are largely recruited from the mentally defective. The reason we have not been more successful in solving these problems is because we have gone at them from the wrong end. To deal with them simply by building almshouses, reformatories, jails, penitentiaries, detention homes and venereal clinics, is like trying to rid a field of weeds by cutting off the tops instead of digging out the roots. The roots of all these problems lie in the minds of the individuals, and effective work can be done only by dealing with these individual minds, and doing it early.

The human body is in a constant state of readjustment to environment. It must adapt itself to constant changes in temperature, humidity, altitude and food. The eye, the ear, the digestive tract are constantly adjusting and readjusting to meet the demands put upon them. When this adjustment ceases to take place the organ becomes unhealthy, sick. So also with the mind. As life becomes more and more complex, the demands for mental readjustment become more frequent and more urgent. The psychiatrist sees in the world all types; the completely adjusted whom we call normal, those who make a partial adjustment, and those who fail utterly. The last named are found in the almshouses, the correctional institutions, and the hospitals for mental disease. Those who are known to the world as the "insane" are the individuals who failing entirely to adapt themselves to the ordinary environment of life, have created an environment of phantasy in which they can live. Their rules of conduct differing from those of organized society, they must be segregated.

The pauper is another example of complete failure of adjustment due usually to mental abnormality. My experience has been that poverty which is not due to sickness or accident is practically always due to mental peculiarity, deficiency or disease. The tramps and

hoboes that have come under my observation are either feeble-minded or cases of *dementia præcox* with deterioration. Surveys of various institutions for criminals show that the percentage of criminals mentally deficient or diseased ranges from 25 to 50 percent. The percentage of prostitutes is even higher. The whole question of venereal disease is intimately related to the subject of psychiatry. General paralysis and cerebral syphilis form from 15 to 20 percent of the admissions to all state hospitals. To what extent syphilis is responsible for congenital defects,—idiocy, imbecility, feeble-mindedness and epilepsy, no one can estimate. The two form a vicious circle. Syphilis produces mental deficiency and disease and mental deficiency is largely responsible for the spread of venereal disease.

Between the class of individuals who fail utterly to adapt themselves to the ordinary environment of life and the so-called normal who makes a satisfactory adjustment, there is a great army known to the psychiatrist as the "borderline" cases. These are the hysterical, the neurotic and psycho-neurotic, the paranoid types, the emotionally unstable, the inefficient, the morally and ethically deficient.

Just as the human body, however robust, may break down under sufficiently adverse conditions, so the strongest mind may give way if the stress and strain of life becomes too great. This was illustrated during the recent war. A Canadian, a Lieutenant in the Royal Army Flying Corps, was a prisoner in Germany for two years, and had endured all the mental anguish that could be devised by German "Kultur." He stated that in the camp which was largely composed of British aviators, men who were picked for their mental and physical stability, not one of them remained normal mentally. They were all afflicted with what he called "barbed-wire madness." He said he had seen one of their best men weep all day because he broke a teapot which had been sent to him from England. Every human mind has a breaking point. The borderline cases are individuals whose breaking point is lower than the average. These are the individuals who fill the churches of new and strange faiths, who haunt the lecture rooms and offices of the "practical psychologist," the "divine healer," and the "faith curist." They fill the offices of doctors and the free clinics, they form the center of numerous problems in industry, in business, in society and in the home.

The psycho-neurotics are individuals in whom there is an inherent weakness which makes it impossible for them to stand up under the ordinary stress and strain of life, and their subconscious minds take refuge in some physical disability that will relieve them from this stress and strain. In the subconscious mind of many there is a craving for attention, sympathy and solicitation. Subconsciously the psycho-neurotic simulates some form of physical disorder to obtain these. In other cases it is to escape from an intolerable situation or an uncongenial employment. In the army these were known erroneously as cases of "shell shock."

It is now being discovered that psychiatry has an important place in industry. One of the first to call attention to this fact was Carleton Parker, who stated that modern labor unrest has a basis more psychopathological than psychological. In an analysis of the I. W. W. he decided that the thwarting of the instincts of the workman brought about a state of mind that amounted to an "industrial psychosis." Dr. Adler recently made a study of 100 men between the ages of 25 and 55 who had a history of continued unemployment. He found that they could be divided into three types. Forty-three percent belonged to the paranoid type,—the individuals who have an exaggerated idea of their own

importance, are suspicious, contentious and nurse a grievance against the world in general, and their employers in particular. Thirty-five percent he classified as cases of inadequate personality,—the feeble-minded and the victims of mental disease of a deteriorating character. Twenty-two percent belonged to the emotionally unstable type, — the individuals who have mild elations and depressions, who are at one time cheerful, optimistic, talkative and officious and others depressed, pessimistic, uncommunicative, lacking initiative, and loath to undertake responsibility.

These types are seen not only in industry but in every walk and condition of life. The presence in the home of an idiot, imbecile, epileptic, alcoholic, drug addict, or a psychopath, creates an abnormal atmosphere which usually interferes with the peace, happiness and progress of everyone in it. No one except the psychiatrist who visits the homes of these individuals can realize what a multiplicity of problems such a person can create.

The paranoid type of person may wield a tremendously disturbing influence, not only in the home, but in the community, the nation and the world. One such person may sow the seeds of discontent and distrust in an industry or business which may spread to thousands of employees and eventually destroy the harmony of the entire enterprise. There is no question that much of the industrial unrest at the present time is the result of the agitation of this type of person. Many of the so-called religions of the present day were founded by paranoiacs possessed of the delusion that they were specially ordained of God to save the world. How much the epilepsy of Cæsar and Napoleon had to do with the wars in which they were constantly engaged is an interesting subject for speculation. The historians of the future will doubtless show the influence of the personality of the former German Kaiser in inducing a national paranoia which resulted in the recent world war. A psychiatrist would probably find a rich field for investigation in the minds of the leaders of the Irish agitation and the Russian upheaval.

Having considered the increasing importance of the problem of mental deficiency and disease to the financial, industrial, and moral and physical health of the community, the public health worker naturally asks: "What is the remedy for such a situation?" In the prevention of mental deficiency and disease, I would mention

First: Eugenics and Euthenics.— The positive phase of this question is the conservation of the fit. Tennyson says:

"Even the homely farm can teach us
There is something in descent."

When the eugenesis of man is given as careful and scientific attention as the breeding of plants and animals, there will be hope for the improvement of the race. Every public health measure that improves the sanitation and hygiene of the community makes for better mental health. Among the preventable physical causes of mental disease are syphilis, pellagra, tuberculosis, fevers, toxic conditions, lead and gas poisoning, head injuries, mal-nutrition and unhygienic conditions in homes and factories.

The negative side of the question is the prevention of the propagation of the unfit. We say "every child has a right to be well born." The child of the mentally defective or diseased is handicapped from the start. California is the only state in the Union that has a perfectly good working law for the sterilization of the feeble-minded and the insane. Over fifteen hundred sterilizations have been performed in the state hospitals and the Sonoma State Home. This law has proven itself an "unmixed blessing." Aside from the eugenic benefit there are hundreds of feeble-minded and psychopathic women in California who are leading comfortable and useful lives out-

side of institutions because the stress and strain of childbirth and bringing up a family have been eliminated.

Second: Restriction of Immigration and Change in Deportation Laws.—One-third of all the patients admitted to the state hospitals of California, and 48% of the patients in the New York State Hospitals, are foreign born. Canadians have just discovered that half of the feeble-minded in Canada are of foreign birth. Anyone who has visited Ellis Island must be tempted to ask "Why close the Golden Gate and leave Hell Gate wide open?" To watch the thousands of low-browed immigrants, unkempt, unlettered and unstrung, filing past the psychiatrist who is attempting to pick at a glance the mentally abnormal, is to realize what a farce the mental examination of immigrants must necessarily be. The most expert psychiatrist in the world could not pick the normal from the abnormal, for the reason that with the exception of the low grades of feeble-mindedness, some cases of *dementia præcox* and advanced cases of general paresis, the average mental case shows nothing that would differentiate him from his fellows. For this reason the deportation laws should be changed. In my opinion anyone who becomes a public charge by reason of mental deficiency or disease at any time before he becomes a citizen of this country should be deportable unless it can be definitely shown that the cause of the psychosis arose subsequent to landing.

Third: Education—Psychiatry being a comparatively new science, there is a crying need for a campaign of education on the subject. This education must begin as has all other matter pertaining to public health, with the medical profession, nurses, and social workers. An Italian woman, a high grade imbecile, was recently committed to Sonoma State Home, and deported to Italy. She left behind her as a legacy to the city of San Francisco, eight illegitimate children. Of all the doctors, nurses, and social workers who had handled this case during her eight pregnancies and confinements, not one, except the last had the knowledge or interest to handle the case intelligently. The psychiatric clinic is largely dependent for its patients upon the other clinics and the social workers. It is therefore essential that these workers and the doctors in the other clinics know something of psychiatry.

The popular demand for information on the subject of mental hygiene is shown by the number of lecturers everywhere holding forth on the subject. One writer has said, "The cry of the mentally afflicted has brought the response of the charlatan." The cities on the West Coast of the United States have recently experienced a perfect wave of "psychology." All types of lecturers have been represented, from the college-bred psychologist to the wild-eyed devotee of the ouija board. They promised to do anything for their patrons, from transforming the personality to finding a husband or wife. Their success consisted in separating their patrons from large sums of money in return for which they administered liberal doses compounded of equal parts of flattery and euphonious platitudes.

Fourth: Clinics and Hospitals for Early Cases of Mental Disease.—Having conducted a psychiatric clinic for five years at the University of California, I know positively that such a clinic can be made a powerful factor in the prevention of mental disease. To such a clinic are referred by the other clinics (if the doctors are at all conversant with the symptoms of mental disease) the early cases, the budding psychoses and psycho-neuroses. To do effective work such a clinic must have a staff of specially trained social workers. Many of the borderline cases previously described, who break under the stress and strain of life's problems, can get along comfortably in a

modified environment. This the social worker can help provide. The Social Service Department of the Boston Psychopathic Hospital reports that during two years, 29 patients were saved from commitment to state hospitals. On these patients alone, the State saved enough to pay the salaries of the entire social service department and several hundred dollars over.

Any form of disease except mental disease can be treated in the hospitals of San Francisco. For the mentally sick there is no place but the State Hospital. In order that a patient may receive treatment there (unless he will go voluntarily) a member of the family must make an affadavit that he is dangerous to "life, person, or property," a warrant must be issued, he must be placed under arrest, detained under the care of the sheriff for 24 hours, tried in open court by a judge of the Superior Court, and taken to the hospital by a sheriff's deputy. Consequently commitment to a state hospital is a last resort and mental cases go untreated until they actually become a public menace. Very often the attention of the authorities is called to their condition by the actual commission of a crime. The same condition of affairs exists in many other cities throughout the United States. Clinics and hospitals for the mentally sick should be as plentiful and as easy of access as those for surgical or medical cases.

There is in psychiatry a great field of preventative medicine yet untouched. The neglect of the subject by the medical profession has resulted in the conditions I have described. The problem of the prevention and treatment of mental deficiency and disease are medical problems and must be handled by the medical profession. The sooner we face these problems and undertake their solution, the better it will be for the community and for the profession.

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ROCHESTER'S TONSIL-ADENOID CLINIC

On another page there is sketched the story of the Tonsil-Adenoid work among the children of Rochester, N. Y. One of the important factors to such an enterprise is the means of getting the children to and from the clinic. This illustration shows the means that has been developed by the Women's Motor Corps of the city. At first the members of the corps, one of whom may be seen in uniform in the picture, drove the automobiles themselves. At the present time the citizens of Rochester send their autos with their own chauffeurs to perform this service. Dr. Harvey J. Burkhart, Director of the Rochester Dental Dispensary, in which the clinics are conducted and the operations performed, is standing near the front wheel of the machine.

SYMPOSIUM ON MENTAL HYGIENE

III. SOCIAL ASPECT OF MENTAL DEFECT

HAROLD W. WRIGHT, M. D.,
San Francisco, Cal.

Read before the Sociological Section, American Public Health Association, at San Francisco, Cal., Sept. 16, 1920.

THERE are many who think of mental defect simply in terms of intellectual defect and consider the social problems related thereto in terms of early diagnosis by Binet or similar tests, segregation in industrial colonies and sterilization of these "unfit" persons with the expectation in a generation or two of eliminating the unfit from society altogether. But, I would remind them that the human mind is more than mere intellect, that defects of emotional and volitional nature lead people into conflict with society and into misfitted situations more easily than does mere stupidity, and that such forms of mental defect are not readily discovered in time to forestall their results. The only adequate test to determine who is fit or unfit to live in normal society is life. No other test can do real justice. We cannot overlook the fact that many stupid people who were backward in school and who would obtain a very low rating from the intelligence tester are doing a great deal of the necessary work of the world and have never been in jail. Some of them got into the army in the late war in spite of us and gave good service in humble capacities. Those of the army who are now the most serious post-bellum problems are those whom we call "borderline" cases; psychopathic personalities of unstable makeup; men whom we had no adequate way of detecting until they had been tried out and found wanting. And it is very interesting to note that in civil life also, the more the degree or kind of mental defect approaches the borderline between normality and abnormality the more of a social problem it becomes, and this is particularly true in relation to delinquency and to problems of vocational education. The grossly feeble-minded we can easily detect and fairly well provide for educationally and industrially. But I repeat that they are not our most serious social problem. Much more difficult to deal with are they who get these of feeble intellect into trouble!

I will grant that because of the imperfectness of normal society the feeble-minded are safer and more happy and more useful members of society if under supervision in special schools and colonies and in supervised industries, and facilities for so placing them have got to be extended as society becomes more complex and competition more stressful; but this is for the purpose of protecting them in the majority of instances. I will admit that crimes of violence and rape are committed by the grossly feeble-minded, but not in the majority of instances. If all those, the world over, who could be diagnosed by routine tests as "feeble-minded" could at once be segregated and sterilized we would continue to have with us in succeeding generations not only others like them but many more of the unstable psychopathic type who would be our most perplexing problem in education and in criminology.

From the standpoint of the prophylaxis of such problems this topic involves the subject of heredity and eugenics and all that these words entail, e. g., the effects upon the offspring of disease acquired by parents, particularly syphilis and alcoholism; the condition of the mother during pregnancy; the ages of the parents at the time of conception of

the child; the skill of the attending obstetrician; the effects of acute infection in early life upon the central nervous system, e. g., encephalitis; the effects of emotional trauma upon the child as conducive to bringing about a morbid personality, the mental cruelties or tactlessness of parents and teachers inducing psychopathic traits and hence vocational handicaps and delinquency. And so we might go on in discussing the various causes of mental defect in its broadest aspects. The subject dovetails with every other department of medicine and sociology; it involves all phases of social activity—the schools, industries, courts of justice and the individual relationships in family and community.

But in spite of the latitude of our subject I feel it worth while to consider briefly a few concrete matters involved in the title of this paper, which pertain to the practical management of some of the results of the various types of "mental defect," or as I would prefer to say, "socially defective personalities." By so doing I hope to escape the accusation of having said nothing constructive whatsoever.

What is the scope of the possible practical efforts toward controlling the social results of all forms of mental defect?

In the first place much might be done to get at the problem in its earliest development by means of a widespread establishment of school clinics in which trained psychiatrists with the aid of social workers and teachers will have the opportunity to estimate accurately the mental development and the personality of all children. In such clinics the subnormal, abnormal, neurotic or exceptional child could be kept track of, frequently seen and individually provided for, either in special classes, special types of school, or in institutions for mental defectives if this were inevitable. Such children as were found to be unamenable to education or control outside of an institution could then be registered in a central clearing house and later placed in such institutions with the consent of their parents or guardians, or the juvenile court when under such jurisdiction. There is nothing Prussian or un-American in this. We already have school control of contagious diseases and mental defect is also a matter of public health. There should be and could be such a clinic in every primary and secondary school. The central clearing house would not be only a registration bureau for the purpose of knowing who and where are the mentally abnormal, but would also be a clinic in mental hygiene for those who had passed the school age and were still struggling in the outside world with their handicaps. It would need to be affiliated closely with the city or town health center and, where such existed, with the medical school of the state or private university; because this is a medical problem and its solution demands the coöperation of the various departments of general medicine.

It is in childhood and adolescence that we can best get results or prevent the social consequences of mental disorder, and often much can be done for the individual at this time by a change of environment or management in school and home to prevent the development of nervous and mental breakdown or criminality. Already we are doing something along this line in our juvenile courts and yet how few juvenile courts there are! Surely those already established have proved their worth, especially in places where the service of a psychiatrist has been used. And if in the juvenile court there is a great need of such service, why not in the adult court? Why not in the jail and penitentiary? Until we have the medical and hospital atmosphere in all these places combined with the vocational-educational atmosphere and the spirit of honest and thorough attempts at correction rather than punishment or simply custody, we cannot hope to reform or rehabilitate delinquents. What

is there in the atmosphere, physical or mental, of the average jail or prison or police court that tends to influence the delinquent to live at peace with the social order?

And then there is the industrial world. Many misfits through no real fault of their own wander from job to job to the detriment of economic production because there is nobody at hand who understands them or can make them understand themselves and be understood by employers of labor. Psychiatric service has a great field before it in the world of industry and in the technical schools for vocational training.

During the war when national necessity demanded it, the service of psychiatry was pre-eminent and its work recognized as of equal importance if not more importance than any other department of the medical corps. Through its aid, most of the unfits were eliminated from the firing line before they reached it and were placed where they could be of some service to their country, and often to their own great advantage and happiness. Many others were so placed after having been found wanting in the first line of defense because psychiatric service was made available from the trenches to the home training camp. And so it should be in civilian life. Here the training camp is the school and the home; the line of communication is the employer of all forms of labor; the firing line is the factory, the department store, the business office and all social contacts. After one has reached the firing line or trenches of civil life and mental defect becomes apparent, the first-aid station should be a psychiatric consultant available at all times to the employer or a community mental hygiene clinic connected with the local hospitals; and in such hospitals there should be as much provision made for the care of mental disorder as for physical disease. Mental disorder is too important to be left to the care of the police and its accurate diagnosis too intricate a matter to be in the hands of the judge or lay jury as is now the case in so many instances when mental defect or disease has led to crime.

The harvest for psychiatric workers is always ripening but the laborers are all too few because so few physicians are interested or educated in psychiatry. Those who are interested and so trained are usually isolated in the state hospitals looking after the end products of mental disease. If these could be released for social service in a wider sphere and men who want to learn psychiatry could take their places and in turn serve their apprenticeship for outside service, the needs we have been discussing might be met in some measure. But this is a problem for the medical schools and can only be indicated in this paper.

CONCLUSIONS

I. In order to ameliorate or prevent the social embarrassment caused by all forms of mental defect, such defects must be viewed and studied in terms of personality and not viewed simply as intellectual deficiencies.

II. Not only teachers of school children and college students need very much more training in pathological and normal psychology, but prospective physicians also. Such training will result in more attention to the individual and less and less impersonal, machine-made methods of education, and in a larger and better supply of psychiatric social workers and physicians for the ever widening field of psychiatry.

III. The field for psychiatric service needs to be recognized more seriously by all courts of justice, by penal institutions, relief agencies and the general public.

IV. Hospital or clinical facilities for the diagnosis and care of mental troubles are absurdly inadequate throughout the country compared with the facilities for the care of less important illness. But it is practicable by organized effort to provide adequate facilities as was proved in the recent war when in an army of

over a million men at a distance of three thousand miles from the base of supplies, and under the trying conditions of offensive warfare, medical care of mental disorders of every type was as adequate as that for any other form of disease or injury. It was the appreciation of the need that brought this about. It is the lack of understanding of the importance to society of psychiatric service and the need for better care and earlier diagnosis of mental illness or congenital defect that prevents progress along these lines.

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FOOD INSPECTION IN CLEVELAND

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Read before Food & Drug Section, American Public Health Association, at San Francisco, Cal., September 16, 1920.

A municipality calls to its aid the scientific resources and responsibility of a university in carrying on departments sometimes subject to political interference. Western Reserve University cares for Cleveland's food and drug inspection, milk and meat expected. This coöperation means excellent service for the city and a high standard of laboratory work for the college.

IT is not the intention of this paper to give any detailed account of the amount of work done, but it is presented to emphasize certain principles which with us have been carried out with some measure of success.

The plan of operation of the food and drug inspection and of the laboratories in general differs somewhat from that in use elsewhere. We do not pretend any originality of conception, but have been following out lines laid down ten years ago before there was any chance even of attempting them, and we believe that we were justified in laying them down.

In the first place, I believe that wherever a university can come into direct and practical touch with the activities of the community in which it is situated, there is a mutual benefit. The community gains the services of non-political experts, and the university becomes more humanized. If this be true at all, it will be most true in the relations of the medical department to the health department of the city. A distribution of time between the medical school and the health department tends to free the latter from political influence inasmuch as the greater security of tenure in the university gives a greater independence. Where a man is independent of his post and where replacing him by a full-time incumbent would result in increased strain on the city budget, he will usually be let alone.

It was on this basis and with this belief that Western Reserve Medical School in 1901 allowed part of the time of the Professor of Pathology and Bacteriology to be spent in the formation and administration of a public health laboratory in the Cleveland health department; later this work was transferred to the Department of Hygiene and Bacteriology, where it now is.

In the second place, I believe that specialization to the Nth power of the type which is more and more exploited in modern affairs is a mistake. Although the subdivision of work so that each man does a limited portion without knowledge of or interest in the whole problem may actually allow of the record of more specimens or inspections, the loss of initiative and interest will, in the last analysis, counteract this apparent increase. We all acknowledge that the closely limited specialist in medicine to whom a case is brought for examination will often err in prognosis and treatment in a manner, to say the least, conspicuous, and I believe that a wider knowledge of the general conditions of the case will stimulate the work of the man who himself actually attacks only a specialized portion. The modern tendency to turn a man into a machine, as exemplified in its full beauty in some of the great manufacturing establishments, even if it be necessary there—which from the standpoint of human development and endeavor one may be permitted to doubt—should not obtain in health work.

It was in part on the basis of this idea that the food and drug inspection of the city was turned over to the laboratory bureau, with the exception of meat and milk. The final disposition of the cases, the court evidence and so forth, depend on the man who collects and inspects and the man who examines the specimens. If it be possible for each to have an inside and an outside view, and if my thesis is correct, there should be an increase of efficiency on this basis. It will be urged that this knowledge of the case will tend to bias in the reports, but so far, in the experience of years, no instances of this have come to the light.

With the exposition of these two theses, namely, that the university and the municipality are mutual gainers by the combination, and that specialization tends to be excessive, we will pass to actual conditions and try to see what light they throw on these ideas and their carrying out.

Milk inspection from the farm to the retailer and meat inspection, both of which require the services of a veterinary, are carried on in the Meat and Dairy Bureau, under a competent chief veterinary and a staff of inspectors. The type of inspection is similar to that in the other large cities and will not come under consideration in this paper. Inspection of the meat and dairy products is also carried on by these same inspectors in the markets and elsewhere, and where the food handler handles a variety of goods, our inspectors assist those of the Meat and Dairy Bureau as far as they can. All other food inspection and all the drug inspection are placed under the city chemist, who reports to the health commissioner through the chief of the bureau of laboratories. The work is carried on under the Federal Pure Food and Drugs Act, and we have just succeeded in passing a health code which will strengthen our powers in this work. The staff consists of the chief chemist and assistant chemists who must all be college graduates, with two assistants and two stenographers. In addition to the actual health work and food inspection and analysis, the laboratory cares for the chemical work of the Department of Public Service, including garbage disposal, together with cement testing, gas testing, etc., and gives services to the department of public safety, involving much detailed analysis of confiscated materials and suspected poisons. It also cares for the analyses for the civil service and, in fact, does all laboratory work for the municipality except what is done in the water works laboratory at the filter plant. A notable part of the expert staff is employed constantly on this work, and paid in part by the departments served. One of the graduate chemists is also a pharmacist with ten years' practical experience, and to him has recently been given charge of a large part of the narcotic work of the city. There are six

inspectors, detailed from the sanitary police for permanent duty save in case of sudden epidemic emergency. Those who show proficiency are retained and inasmuch as the work is made interesting to a degree greater than in other activities of the sanitary police, there is a marked rivalry for the posts. The inspectors are taught the relative value of the actual food inspection and of the sanitary inspection, together with some idea of what part of the work is really health work and what part is more truly a question of business honesty and economy, and are expected to report on all the details of a food handling establishment which concern the health department. When such a food-handling establishment is of a special type such, for instance, as a bottling works, the food chemist takes up with the inspector the special adulterations or other lapses from legality which he may expect to find, and indicates proper labeling for the product under investigation. Weekly conferences are held with the Chief Chemist, at which a certain amount of reading is suggested, and such informal meetings keep up the interest and increase the efficiency of the inspectors. These are also encouraged to discuss with the chemists the findings in the cases on which they are working and we find that this knowledge of the case is a very definite stimulus, and helps materially when the cases come to court. Perhaps, however, the greatest value in this relation of the inspector to the case is that with it he is able to discuss the question intelligently with the dealer and that, as a result of this, many cases are kept out of court. In view of the amount of time which can be wasted on the most ordinary court case, and the very small size of our staff, this is a matter of no slight importance. In a similar manner the samples for pharmaceutical examination are collected by the man who is to examine them, and his special knowledge admits of condemning many specimens by organoleptic tests, as was actually the case during the war, when Cleveland as well as other towns was flooded with fake drugs.

The special training of the inspectors has been part of the reason for our very close relation with the Federal inspectors, whose acceptance of our reports and whose assistance in speeding up matters would not have developed with the ordinary type of inspection.

All the men from top to bottom are trained to the belief that most cases can be settled without resort to police authority, and that the test of the efficiency of a department is not the number of successful prosecutions, but the actual improvement of the conditions. There are always two sides to a case, and I still hold the conviction that most of the offences against these special laws and regulations are not malicious, and that a heart to heart talk from an inspector who has this attitude will often bear fruit. Where this fails, an interview with the Chief Chemist in his office will usually bring about reform, when the offender can be made to understand that he is not being persecuted, but that we must enforce the laws.

This method we also work by the upstairs route, so to speak. The manufacturers and food dealers have come to believe that we are straight with them and do not play favorites, and now when they have new products to put out, they come to us with the formula and label and ask for our approval. This is done with the mutual understanding that if samples on the market do not come up to the standard we are free to prosecute, but in four years that has not occurred. One of the ways in which we have gained the confidence of the wholesalers is in connection with the inspection of carload lots at the freight depots, which gives the Cleveland merchant a chance to refuse a bad shipment and prevents a good deal of trouble for him. We have also made it a point to explain ourselves to the manufacturers' associations such as the bakers' and the druggists' organizations, explaining the law and our

duties, and asking them as civic bodies to assist us in the civic work. After a natural period of hesitancy this has worked so well that our staff is in great demand as speakers at their large meetings, and where we had to force our way in as exhibitors in the Food Shows, now we are urged to exhibit. Our propositions, even when they involve the expenditure of a good deal of money, meet with a ready response after they are explained, as may be illustrated by an instance. We felt it necessary to have all the baked goods exposed for retail sale covered to prevent the access of flies and also the handling of the would-be customers, and before any orders were issued we had a meeting with the bakers' association, and discussed the matter. As a result, by the time we were ready to get out the order much of the work was already in hand and the whole job was accomplished without a court case. If this sort of coöperation did not exist, it would not be possible with the small staff at our disposal to carry on the routine inspection of the thousands of grocery stores, drug stores, bottling works, restaurants, candy factories and so forth. It would be absurd to claim that we are 100 percent good or anywhere near it, but we do feel that the attitude of the majority of the food handlers is such that we can put additional emphasis on those who are persistent and almost hopeless offenders. When anyone can start a grocery store or a restaurant, and almost anyone does, it is hard to keep track of these, and it is here that the majority of our failures occur.

Another phase of the work in which we have perhaps shown some originality is in connection with the drug inspection and notably with the proprietary medicines. All efforts by the old methods met with failure and it was clear that something new was needed. On the basis that while the municipality cannot tell the milkman what he must do in milk production, or tell the country slaughter house what must be the condition of the cattle, neither can the city tell the medicine man how he must make his medicine or what must or must not be in it. But equally on the same basis the city can tell the milk man or the meat man what must or must not be in it *if it is to be sold in the city.* The meat and milk question has been carried to the supreme courts of several states and has won, so it was easy to persuade the City Law Department to give the new scheme a trial. We selected certain types, including baby medicines with opiates, poisonous dyes and lotions, and put in also the preparation of a million-dollar corporation from New York to show that there was no favoritism, and to get a test case with someone who would fight. We listed these to the drug stores and forbade their sale after a reasonable period of a few days. The air was at once filled with loud howls, but not from the druggists who really make but little profit on the proprietary medicines and prefer to offer something of their own. The loudest howl came from the million-dollar corporation, which sent its best legal talent to order us to withdraw the order and apologize. No revision of the order forthcoming, we were visited by the talent of the National Proprietary Association. In the interval of apparent peace which followed this, we got the druggists together and explained the situation. We showed its relation to their financial interest and warned them that the Proprietary Association would be on the job and try to get them to pull the chestnuts out of the fire. This was exactly what did occur, but too late, and the coolness of the reception led ultimately to an abandonment of the attempt. For two years none of the corporation's bottles were sold over Cleveland counters and only recently after a marked change of labels and of the literature in the package have they been allowed to come back.

With the valuable assistance of the Advertising and Better Business Clubs, a constant pressure has been put on the

newspapers. This, as every one knows, is the hardest and yet the most important part of the campaign. If a drug is not advertised, it is dead, and every effort will be made to keep the advertisement going. The way had already been opened by the removal of the cancer and venereal advertisements largely as a result of the general country-wide and Federal propaganda, and good results have been obtained, which are in the main becoming better all the time. Practically all new advertising is submitted to us before insertion and if there is disapproval on our part the advertisement is not accepted. It is surprising how many are thus kept out, and though there is still not a perfectly clean sheet in the city, the improvement is marked. No specifics are advertised, and where in the time of epidemics there is a change in the form of an existent advertisement to indicate that it is a sure cure for pneumonia, poliomyelitis or the like, we have always been able to get it removed immediately on the request of the Commissioner of Health.

In other words, the results have been very encouraging, though the necessary change of public opinion which must occur before the newspapers become our sincere friends will take years of unremitting effort. The plan is not a panacea and we would be breaking our own rules if we advertised it as such, but even in serious cases of the disease it will give relief if persisted in. We have on file all details of more than 3,000 proprietary medicines, some now historical, too many still in the field. Where the stuff is sold in Cleveland we have our own analyses as well as all recorded ones, and repeat the former from time to time. The most promising thing is that we have gained the confidence of the druggists so that the Northern Ohio Druggists' Association which comprises over 90% of the possible membership, helps us in every way. The university connection is here strengthened by the close association of the Dean of the Pharmacy School with the practical druggists, so that there are two sources of information and coöperation.

Progress is not uniform. We slip at times, but on the whole we advance, and not a few of the steps come through the suggestions of the druggists themselves.

One might continue indefinitely with instances of one sort and another, but mere iteration is of no value. The experience of the years has shown that whether it be *post hoc* or *propter hoc,* the combination of association of the university in an official manner with the city and the establishment of the belief among the food handlers that the city is trying to help and not to hinder, result in an ease of administration that has been a life saver to us with our small budget and consequently small staff. It is also most true that none of the work could have been accomplished without the service of the three successive City Chemists, White, Knopf and Knapp, whose devotion to the work and development of the theses with which we started have been the moving feature of the affair, and through whom the instruction of the subordinates, giving these a share in the interest and avoiding the deadening which results from over specialization, has been possible.

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The Report of the Sub-Committee on Rural Sanitation (Sanitary Engineering Section), together with portions of the discussion, presented at the Annual Meeting in San Francisco, are scheduled for the June issue of the Journal.

HOOKWORM IN CALIFORNIA GOLD MINES

RALPH W. NAUSS, M. D., DR. P. H.*

Read before Section on Industrial Hygiene, American Public Health Association, at San Francisco, Cal., September 17, 1920.

HISTORICAL—EUROPE

As far back as 1847[1] it was believed that "Egyptian Chlorosis" was due to ankylostoma found in the small intestine at autopsy. Subsequent to that time, there have been many reports of the finding of ankylostoma in anemic individuals and their presence has been believed to have some relation to the causation of the anemia. However, it was not until after work was begun on the St. Gothard Tunnel[2] that the significance of this parasite in the etiology of both endemic and epidemic anemias was generally appreciated. Several years before the appearance of a very severe and fatal anemia among workmen engaged in this tunnel in 1880, Prof Grassi[3] made known his discovery of diagnosis of hookworm infection by microscopic examination of the feces. This made possible a thorough clinical study of the St. Gothard epidemic. Since that time hookworm anemia has been found to be a serious menace, not only in the tropics and subtropics generally but also in mines situated in various countries of the temperate zone.

Perroncito,[4] to whom the principal credit is due for establishing the true etiology of the anemia among workmen engaged in the St. Gothard Tunnel, also showed hookworm infection to be prevalent among men employed in various mines of Hungary, Sardinia and South Central France. About this time hookworm infection was likewise found to be quite common among brickworkers in Germany. The origin of soil infestment in and around brickfields[5] was traced to immigrants (Walloons) who worked in the mines of Belgium during the winter months and migrated to Germany to labor in the brickfields during the spring, summer and early fall. In 1896[6] it was discovered that hookworm-infected workmen from certain Austrian mines were carrying the infestation into German mines. Whether or not this was the occasion of the first appearance of the infestment in German mines is not definitely known. It seems, however, very probable that hookworm disease has existed among miners in Hungary, France, Belgium and possibly Germany, for several centuries at least, the belief being that former epidemics of anemia among miners in these countries were caused by hookworm infection.

In Germany,[7] after the discovery above mentioned, steps were taken to control the anemia developing among miners by the provision of sanitary conveniences and the treatment of the sick, incapacitated and anemic. The disease, however, continued to spread, and as a consequence, a complete hygienic program was adopted in 1903, including the discovery and cure of all infected miners whether sick, anemic, incapacitated or merely carriers. This, though expensive and time-consuming, has proven to be the best policy. In Austria, where incomplete measures only were attempted, anemia is said to have continued to exist among 20 to 90% of the workmen. In Belgium the results achieved have been in ratio to the thoroughness of the control campaigns. Circumstances and conditions in French and English mines seem to have been more favorable for the control of mine infestment, and as a result the application of more or less incomplete measures have given gratifying results in control of ankylostomiasis among miners.

CALIFORNIA

The specific cause of the anemia,

*The author was engaged as Asst. Epidemiologist by the California State Board of Health when the material for this paper was collected.

known for years to have been exceedingly prevalent among miners employed along the "Mother Lode," California, was first recognized in 1906 by Dr. F. F. Sprague of Jackson, who had previously seen service in the Philippine Islands It was he also who first treated this condition successfully at Jackson and endeavored to convince his colleagues of its specific nature and curability. Dr. E. E. Endicott,[8] health officer at the time of Amador County, Calif., and attending surgeon for men employed in two of the largest gold mines situated near Jackson, the county seat, followed the lead of Dr. Sprague in the correct diagnosis of these anemias and achieved most gratifying results in the proper treatment of the same.

In 1909, Dr. Herbert Gunn,[9] representing the California State Board of Health, made an investigation to determine the extent of infection among "Mother Lode" miners. In certain groups of miners, he found a high percentage showing an abnormal Eosionophilia, the cause of which was revealed by confirmatory stool examinations. His conclusions were as follows:

(1) Hookworm disease is endemic in certain mines of California.

(2) From 50% to 80% of those working in these mines are infected.

(3) The infection undoubtedly is present in practically all the gold mines of California and in those of Nevada, just over the border.

No further attempts at investigation or control of ankylostomiasis among California miners were made until 1916, when the California State Board of Health in coöperation with the Federal Bureau of Mines and the Industrial Accident Commission of California agreed upon the following program:

1. To encourage the superintendents of the various mines to coöperate in the campaign.

2. To examine fecal specimens from the miners and determine the percentage of infected miners.

3. To reach an agreement with superintendents, that all infected men must be treated.

4. To make re-examination of all treated men.

5. To issue "Hookworm Certificates."

6. To re-examine eventually all California miners.

The results of work conducted along these lines by Cumming and White, representing respectively the California State Board of Health and the Federal Bureau of Mines, were published in 1917 by the U. S. Bureau of Mines (Dept. of the Interior) in Bulletin 139, entitled "Control of Hookworm Infection at the Deep Gold Mines of the Mother Lode, California." This report is most interesting statistically, but not very convincing regarding endemicity and the actual control of the infection among workmen.

In October, 1916 (the work of Cumming and White having been conducted during the Spring and early Summer of this year), the work of investigation and attempts at control of hookworm disease among miners were continued by the California State Board of Health under the direction of Dr. Cumming. However, owing to labor conditions, it seemed impractical immediately to resume activities along the "Mother Lode." It was; therefore, decided first to make a survey of the Grass Valley Gold Mining District, which is similarly situated in the Western foothills of the Sierra Nevada, some 60 or 70 miles northwest of Amador County, in which the deepest "Mother Lode" mines occur. This survey was completed during the latter part of November, 1916, and resulted in the finding of but two infected miners out of a total of some 1,400 workmen examined (one of these men was known to have formerly worked in "Mother Lode" mines).

In December, 1916, the labor situation had improved sufficiently to justify the resumption of our work among "Mother Lode" miners. The remainder of this paper is concerned with a discussion of factors influencing endemicity of hookworm disease in mines and the results of

related observations and experiments made by me during the winter and spring of 1916-17. Statistics as to the incidence of infection among men engaged in the various "Mother Lode" mines surveyed in 1916 and 1917 are shown on the tables here displayed. The significant reductions in percentages that appear so striking in some instances are not due primarily to the effects of treatment but rather to the marked turnovers in labor resulting from the general strike which occurred in the fall of 1916. A re-examination of some 40 men found to be infected before the strike and treated one or more times showed a much less reduction in percentage of infection than is indicated for Mine "A," given at the head of the table.

FACTORS INFLUENCING ENDEMICITY OF HOOKWORM INFECTION IN MINES

The time allowed for the reading of papers in section meetings is such that only a brief résumé of my original discussion on these points can be attempted. In this article, which has not yet been published, factors influencing endemicity which depends on infestment of mine soil and water with hookworm larvæ are considered under four headings as follows:

1. Temperature, relative humidity and ventilation.

2. Mine drainage and methods of collection and removal of mine water.

3. Chemical composition of mine water.

TABLE I

Detailed Results of Diagnostic Surveys for Hookworm—Cumming and White,[10] 1916, and the Author, 1917

		Underground Workers					Surface Workers		
Mine	Year	Number Examined	Number Found Infected	Per Cent Infected	Mine	Year	Number Examined	Number Found Infected	Per Cent Infected
A	1916	158	95	60	A	1916	37	3	8
	1917	303	35	11		1917	53	2	4
B	1916	292	47	16	B	1916	..	..	..
	1917	370	30	8		1917	94	2	2
C	1916	171	114	67	C	1916	28	1	4
	1917	101	28	28		1917	8	0	0
I	1916	...	..	..	I	1916	..	..	..
	1917	58	8	14		1917	..	..	..
D	1916	57	22	39	D	1916	13	3	23
	1917	52	44	46		1917	..	..	..
J	1916	..	..	..	J	1916	..	..	..
	1917	57	9	16		1917	14	0	0
E	1916	56	13	23	E	1916	..	..	..
	1917	46	1	2		1917	..	..	..
F	1916	29	6	21	F	1916	18	2	11
	1917	31	3	10		1917	12	0	0
G	1916	121	40	33	G	1916	27	4	15
	1917	114	8	7		1917	24	1	4
K	1916	..	..	..	K	1916	..	..	..
	1917	42	2	5		1917	17	1	6
H	1916	85	26	31	H	1916	14	1	7
	1917	76	11	14.5		1917	19	0	0
L	1916	..	..	..	L	1916	..	..	..
	1917	125	16	13		1917	15	1	6.5
M	1916	..	..	..	M	1916	..	..	..
	1917	32	0	0		1917	13	0	0
N	1916	..	..	..	N	1916	..	..	..
	1917	85	6	8		1917	27	0	0
O	1916	..	..	..	O	1916	..	..	..
	1917	103	5	5		1917	9	0	0
P	1916	..	..	..	P	1916	..	..	..
	1917	113	0	0		1917	60	0	0
Q	1916	..	..	..	Q	1916	..	..	..
	1917	28	0	0		1917	12	1	8
R	1916	..	..	..	R	1916	..	..	..
	1917	34	9	26.5		1917	..	..	..
Total,	1916 969		362	36.2	Total,	1916 137		14	11.3
	(Average per cent for 8 mines)					(Average per cent for 6 mines)			
Total,	1917 1770		195	11.9	Total,	1917 377		8	2.1
	(Average per cent for 18 mines)					(Average per cent for 14 mines)			

4. Mine sanitation with particular reference to feces and disposal.

Temperature, Relative Humidity and Ventilation.—Under natural conditions, the most suitable temperatures for growth and saprophytic development of hookworm embryos to the infective larval stage are between 65° and 85° F. (18° and 30° C.). Below this range of temperature growth and development are slow; above this range growth and development are rapid but the eggs, embryos and larvæ are very apt to die. In the laboratory under artificial conditions, good results can be achieved if temperatures from 25° to 30° C. are maintained. The average temperatures of only a few of the mines, included within the scope of my observations and studies of hookworm infection among California miners, fell below a temperature generally considered necessary for normal growth and development of hookworm embryos and larvæ. Similarly it may be said regarding both limits of temperature above mentioned that there was no mine in some parts of which conditions of both temperature and relative humidity were not favorable for the establishment of endemic foci, assuming all other necessary favorable conditions to have been present. As to relative humidity, it may further be said in general that the humidity in all these mines was uniformly high.

Without going into more detail under this heading it must suffice to state that effective ventilation tended, as would be expected, to reduce materially both the underground temperatures and relative humidities. However, good ventilation was the exception and not the rule in "Mother Lode" mines. Where ventilation was effective comparatively low degrees of infection among the men appeared to be the case.

Methods of Collection and Removal of Mine Water.—A study of mine drainage and methods of collection and removal of mine water proved to be most interesting and instructive. In addition to drainage along the floor levels of mines, it is necessary also to consider leakage from one level to another through fills and connections such as shafts, winzes and raises. These are all very important factors in the possible dissemination of larvæ from infested localities. Whether the infective larvæ are caught up and transported by water as it is drained off from infested areas or whether the collected drain water is supplied more directly with larvæ hatched from ova-laden feces through the use of water collecting devices for toilet conveniences, seemed to make little difference in the ultimate dissemination of larvæ. Attempts to intercept hookworm larvæ while being carried by mine drain water proved unsuccessful. However, periodic observations on the dissemination of larvæ hatched from infested stools deposited along a mine drain gutter as shown in Illustration I indicate the important role which mine drain water may play in the distribution of infective larvæ.

Boycott and Haldane,[11] who investigated ankylostomiasis among Cornish miners in 1903-1904, mention the use of the pump-cisterns by the men for receiving their evacuations and think "their use for this purpose less open to objection, since the feces are pumped to the surface where they can probably do no harm." They state further that "running water is said to prevent, in any case, the development of ova." These statements are, however, contrary to my observations and experience. In mines where the sumps were so used, the highest degrees of infection were found to exist among the underground workmen. Likewise the clinical histories of cases pointed quite clearly to the infested sumps as the most probable sources of high degrees of infection among the workmen. Running water did not appear in any way to prevent the development of larvæ from the ova. Furthermore, as already intimated, in addition to not preventing development of the larvæ, running water undoubtedly serves

both to distribute and collect larvæ from points of origin. Evidence on this point will be presented a little later.

In case of one mine (mine B in Table II) situated in the very center of the endemic area, a comparatively low degree of infection was upon examination found to exist among the underground workmen engaged therein. Without a careful survey of past and present methods of feces disposal in conjunction with the particular method of collection and removal of the mine drain water, a satisfactory explanation of this apparent anomaly would have been difficult if not impossible. In brief, it was found that the men defecated into wooden tanks or exit-pipes leading from the same, which were completely emptied at least once a day. The use of special water hoisting skips in a vertical shaft favored the removal of the water containing ova-laden feces with a minimum amount of shaft contamination. With these exceptions the circumstances incident to the operation of and conditions existing in this mine were quite similar to those found in neighboring mines where a high degree of hookworm infection existed among the underground workmen.

Chemical Composition of Mine Water.—The relation of the chemical composition of mine water to the prevalence of hookworm infection among the workmen presented another interesting problem in my investigations. In case of two neighboring gold mines and a nearby copper mine which was also included within the sphere of our activities, surprisingly low percentages of infection were found among workmen engaged therein. Average samples of drain water from the two gold mines in question showed about 1% chlorine and a representative sample secured at the copper mine showed 1.6% chlorine as sodium chloride and a correspondingly high percent of the sulphate radicle iron and copper. See Mines N and O in Table II.

During the course of their investiga-

TABLE II.

REARRANGEMENT OF PERCENTAGES OF INFECTION GIVEN IN TABLE I TOGETHER WITH OTHER DATA.

Orientation Along Lode	Mine	Percent Workmen Underground 1916	1917	Infected Surface 1916	1917	Average Temperature of Working Levels (Winter)	Depth of Working Levels (In feet)	Underground Toilet Facilities	Remarks
	L	....	13	....	6½	82° F.	1200–1800	Fair	
	H	31	14½	7	0	69° F.	1900–2000	Poor	
	K	....	5	....	6	69° F.	1600–2000	None	
	G	33	7	15	4	78° F.	2000–2800	Conditions very bad. Poor	
	F	21	10	11	0	62° F.	400–850	None	
	E	23	2	....	....	71° F.	1400–1800	None. Men go to surface.	
	J	....	16	....	0	.....	.....	None	Old mine just being reopened.
North —West	D	39	46	23	....	77° F.	2700–3200	Very bad. Sumps used	
	I	....	14	....	....	78° F.	.....	None	Mine recently reopened
	C	67	28	4	0	75° F.	1800–2850	Poor. Sumps formerly used	Drain water from mine "D" removed through shaft of this mine.
	B	16	8	....	2	73° F.	2400–3450	Fair	
	A	60	11	8	4	85° F.	3900–4300	Fair. Sump said to have formerly been used.	
South —East						DEEP RIVER GORGE			
	M	....	0	....	0	.....	400–600	None	Mine water contains: 1% Na Cl.
	N	....	8	....	0	73° F.	1900–2750	Poor	
	O	....	5	....	0	75–80° F.	1400–2700	None	Copper Mine 1.6% Chlorine high in SO_4, Fe. and Al.
	P	....	0	....	0	73° F.	1100–2750	Poor	1% Na Cl.
	Q	....	0	....	8	Similar to P.	.....	.....	Mine reopened recently Water saline
						DEEP RIVER GORGE			
	R	....	26½	....	....	70° F.	1300–1900	Poor Sump used.	

tions in Cornish mines, Boycott and Haldane also found hookworm infection rare among the workmen engaged in one mine the workings of which extended beneath the sea and into which sea water percolated. Frequently specimens of drain water from this mine showed less than 1% of chlorine as sodium chloride. In discussing the action of disinfectants on hookworm larvæ, these investigators[12] point out the necessity of carefully distinguishing the stages of growth of the larvæ in question. Upon emergence from the egg, they are readily killed by comparatively weak germicides, but if given favorable conditions of temperature, moisture, abundant food supply and freedom from contact with deleterious substances until encapsulated in the second moult skins, then these so called "encysted larvæ" manifest greatly increased powers of resistance to adverse conditions and substances.

According to both Manouvriez[13] and Calmette,[14] mine water, containing as low as 2% sodium chloride appeared to have been effective in preventing the infestment of the soil in French mines. These authors differ, however, as to the practicability of artificially salting mines in order to prevent infestment of the soil. I am inclined to agree with Calmette regarding the impracticability of this procedure as an effective control measure on a large scale for the reasons: (1) That the rapid dilution of the sodium chloride by the mine drain water will not permit of the maintenance of a sufficient degree of concentration and (2) in view of the great total length of drifts and cross-cuts such practice would entail an expense out of all proportions to the object desired to attain. However, on a small scale, salting applied to limited localities will undoubtedly prove more or less effective. In order to secure more light if possible on the effects of the chemical environment on the hatching of hookworm ova and development of the larvæ resulting therefrom, experiments were devised, approximating in so far as possible actual mine conditions. Accordingly, typical specimens of mine earth were collected which seemed to represent the variations in geological formation and mineral composition of ore and rock that it was thought might have a bearing on this problem. These earths, after being dried, were thoroughly sterilized by heat and employed in two sets of parallel culture experiments. In the one series suitable quantities of ova-laden feces and mine earths were intimately mixed and cultured in a moist condition at 28.5° C.; in the other series the feces mixed with bone black (Loos method) were superimposed upon wafers of mine earth, the whole thoroughly moistened and cultured in a similar manner. The results of these two series of parallel experiments seemed to justify two conclusions: 1. That chemical mine soil environment as indicated by the chemical constitution of mine drain water exerts a marked influence on hatching, growth and development of hookworm larvæ. 2. That where deleterious substances are present in no great quantity the attainment of maturity (second moult or so-called encysted stage) is insured only when this state is reached before contact with harmful substances. It is quite well known that hookworm ova and larvæ in the encysted stage are quite resistant to adverse conditions as to chemical composition of the surrounding medium. The experiment is, however, too limited in scope to form the basis of any sweeping deductions, but it does appear to indicate at least that when the formations are of such a nature as seriously to load the drain waters with acid radicles such as chlorine or sulphate in combination with sodium, iron, copper, etc., hookworm larvæ will with difficulty be able to reach maturity under natural conditions and the small percent which may arrive at the infective resistant stage will have less opportunity of surviving long.

Mine Sanitation with Particular Reference to Feces Disposal.—It is an

unfortunate fact that the great majority of responsible persons engaged in the mining industry, have failed until very recently to recognize the importance of underground sanitation. Only comparatively few companies can boast of having given this matter the attention which it deserves until faced by an increasing prevalence of anemias due to hookworm infection. Even on the surface, the supply of toilets has frequently been most inadequate and crude. Consequently, although miners were in many instances expected to return to the surface to defecate when necessary, the usual result was that the men for sake of convenience and to avoid discomfort, especially in cold weather, would almost invariably resort to abandoned or unfrequented parts of the workings.

Such conditions and practice were far from the exception in "Mother Lode" and adjacent mines previous to 1916. In some instances, somewhat prior and in most cases subsequent to this time, very important improvements in the disposal of feces had been introduced into many of these mines. However, there still remains much to be desired in the way of more careful attention to details and the enforcement of sanitary rules. There are nevertheless notable exceptions to this statement and the general tendency seems to be in the desired direction. The greatest difficulty, encountered on the part of mine superintendents and foremen desirous of doing all possible to minimize fecal contamination of mine soil, is the periodic collection and removal of accumulated excreta by transport to the surface. Most men are unwilling to do such service even when inducements such as extra pay or shortening of time on duty are offered.

In England,[15] it was thought that simple prophylactic measures sufficed to eliminate ankylostomiasis as an "industrial inconvenience" among miners. The scare, it is said, accomplished the greatest good in bringing much needed improvements in mine sanitation and thereby safeguarding the future. It is furthermore believed that the outbreak in Cornwall proved the general immunity of most mines in England since there had been free and frequent interchange of men between the infested mines and mines located elsewhere in England. It is also contended that "As far as the infested mine itself is concerned, it does not seem that the benefits which have been gained in Westphalia (Germany) are greater than those in Cornwall to a degree at all commensurate with the enormous sums of money which have been spent on medical examination and treatment and the payment of wages to men under treatment." It is admitted, however, that the German system has the great advantage within a few years of largely reducing the number of men capable of carrying the infection to fresh places.

PLATE I

Ova-infested stools scattered at intervals along a mine-drawn gutter.

Circumstances and conditions regarding ankylostomiasis among California

miners are in many respects similar to those reported from England. The description of Cornish mines as given by Boycott and Haldane in writing of their investigations, would with slight alterations serve quite well as a general account of "Mother Lode" mines. Likewise, the limited prevalence of the disease and the ease of reduction of incidence by the application of sanitary measures afford striking parallels. Regarding the freedom of other groups of mines in California, we have not full information, but sufficient data have already been collected to justify the statement that the disease had probably only secured an endemic foothold in some of the deep "Mother Lode" mines. No evidence of endemicity elsewhere in the state, either in mines or on the surface, has been found. State officials who are familiar with mines throughout the state, report conditions more or less unfavorable except in "Mother Lode" mines. Likewise, the examination of selected groups of workmen in a number of instances lends further support to this statement.

RESULTS OF OBSERVATIONS AND EXPERIMENTS IN MINE "A"

1. **Dissemination of Larvæ in Mine.** Notwithstanding the rigid discipline regarding the use of underground commodes in this mine, it was found that men occasionally resorted, for toilet purposes, to unfrequented parts of the mine when convenient and detection seemed unlikely. (Plate II is typical of such conditions.) In one particular cross-cut stools were on several occasions found deposited at intervals along one edge of the drain gutter (as depicted in Plate I already referred to). Upon microscopic examination, several of these were found to contain an abundance of hookworm ova. At regular intervals subsequently, samples were taken from these stools, from the surrounding earth and sediment deposited along the edges and bottom of the drain gutter both above and below the sites of excrement. The nematode larvæ obtained therefrom were observed from time to time and compared with those derived by culture from the stools as originally found, i. e., before larvæ had been hatched from the ova.

The method employed for the separating of hookworm larvæ from mine earth, consisted in placing the earth to be examined upon a medium ribbed paper filter and leaching with warm water from time to time permitting slight drying during the intervals. This seemed to be a fairly satisfactory method of securing the desired segregation of hookworm larvæ. As to just how effective this method may be, I cannot state since no attempt was made to determine this point. However this may be, I had no difficulty in obtaining hookworm larvæ from mine earths by persistent leaching with warm water. Several common earth nematode larval forms also came through the filters quite readily but little difficulty was experienced in identifying the hookworm larvæ.

These observations showed that under the most favorable conditions which was the case in this cross-cut, the larvæ are hatched out from hookworm ova in a few days and soon leave the stool, being found in the moist parts of adjacent surroundings, particularly close to the edges of the drainage gutter and frequently in the fine sediment accumulated on the bottom of the same. In all instances such larvæ had apparently already reached the end of the second moult stage. They were sometimes quiescent and at other times they were quite active in their movements. Concentrated light and heat appear to stimulate active movement.

As time goes on, one may demonstrate the presence of hookworm larvæ at increasing distances down stream from the point of origin. Thus it can readily be understood how in a comparatively short time, thousands of hookworm larvæ originating from a single stool may be scattered along drain gutters and eventually reach the shaft where they may accumulate in the water catchment and storage devices or be scattered still fur-

ther following the water in its course to lower levels in the mine. It can also be easily appreciated that transport of such infested drain waters to the surface in open "skips" may soon result in serious infestment of the entire shaft where sufficient dampness exists, which is the rule. These being the possibilities of mine soil infestment, resulting from one limited focus of infestment in the mine, what must be the sum-total resulting from promiscuous defection in a large mine with its many ramifications of drift, cross-cut, raise and stops? Such conditions previously existed in "Mother Lode" gold mines. Owing to circumstances and conditions highly favorable to the establishment and maintenance of endemic foci in some of these mines, hookworm infestment of the soil early became established. These facts enable us to account for the reputation which mention of the "Mother Lode" mining district seems in general to have carried among miners and also to understand why the rank and file of men employed therein were drawn more largely from classes of foreign mine workers who are not at all careful about their personal habits.

2. Infection of Puppy Dogs.—As an ultimate means of determining the presence, identity and infective nature of hookworm larvæ obtained from earth collected in infested mines, an attempt was made to infect very young puppy-dogs in the abandoned cross-cut in Mine "A" where the observations just described were made. These animals which were of the fox terrier breed, were upon several occasions adequately exposed to mine soil thought to be infested with hookworm larvæ.

Shortly after the arrival of the half dozen puppy-dogs secured for the conduct of this and several other experiments, distemper unfortunately manifested itself among them. The two fox terriers appearing to be in the best condition were selected for this crucial experiment. The one lived but 12 days after the last exposure in the mine, while the other survived 29 days. At autopsy in case of the former, a small immature nematode worm was found in the upper half of the small intestine. This specimen showed clearly the two pairs of teeth characteristic of *A. duodenale*. The latter animal gave the following post-mortem findings.

PLATE II

Typical of abandoned cross cuts in some of the mines frequented by men for toilet purposes.

"Rigor mortis not yet set in. Slight sub-acute inflammation of stomach and duodenum. Both lungs consolidated. All other organs in apparently normal condition. In the middle one-third of the small intestine, there were found five hookworms (one male and four females), which are but one-half the usual size. However, microscopic examination shows mouth parts of all and the bursa in case of the one male to be well developed." (These five specimens have been identified by Dr. W. W. Cort, formerly Consulting Helminthologist to the California State Board of Health, and sub-

sequently by Dr. Allen J. Smith, Professor of Pathology in the Medical School of the University of Pennsylvania, as *Ankylostoma duodenale*. However, the females lack evidence of sexual maturity as shown by absence of identifiable mature ova in the uterus.)

Judging from the length of time elapsing between infection and death in case of the second animal (approximately four weeks), it seems most probable that infection was by mouth. It is generally accepted that 6 to 9 or 10 weeks is required for complete development when larvæ enter exclusivey by way of the skin, while two or three weeks less time is required when they enter by way of the mouth. Furthermore, the stage of growth in case of the one specimen secured from the first experimental animal after 12 days can only be accounted for on the assumption that entrance of the original mature saprophytic larva was direct through the mouth of this animal.

The above experimental infection of puppies with *A. duodenale* proves conclusively that hookworm larvæ, capable of infecting selected young puppies and beyond a reasonable doubt underground workmen also, were present in this crosscut. Moreover the similarity of general underground conditions and sanitation in other parts of this mine ("A") and contiguous mines justifies the further conclusion, based on analogy, that hookworm infection could be even more easily acquired by the underground workers (the natural habitat of the adult *A. duodenale*) as long as infected men continued unrestricted to commit nuisances in these mines or were permitted to defecate into the water catchment storage devices.

INFECTION AMONG SURFACE WORKERS

The existence of hookworm infection among brickmakers in Germany has already been referred to. Owing to the low temperatures existing during the winter months, reinfection of the brickfields was probably necessary at the beginning of each warm season. As a consequence of this and other circumstances, connected with brickmaking, the earth infestment appears to have been a localized one, affecting principally those employed in the brickfields or others whose occupations necessitated tramping over the same areas as was the case with shepherds at times according to Leichtenstern.

At mines, infection among surface workers has been found to be relatively low both in Germany and along the "Mother Lode." European investigations state that not over 1% of infection has been found among surface mine employees at any time. During the period of my work, only one infection was discovered, the origin of which could not be traced to infested mines or known infested surface localities. As was the case in Germany, no instances of infection were found among the wives and children of miners in California.

The variable temperature, generally low humidity, abundant sunlight and comparative sparseness of shade throughout the gold mining districts in the Sierra Nevada foothills, are all factors operating against the establishment of endemic foci on the surface in the neighborhood of mines. There was not lacking, however, a supply of infective larvæ discharged with drain waters from infested mines during 1916 and 1917 and previous years. In some cases, such mine drain waters had been used for irrigating gardens, and it seemed that under such circumstances some infestments of the soil might reasonably have been expected. However, such practice was the exception and not the rule. If, on the other hand, such infested mine drain waters had been used extensively for irrigation, some infections would have most probably developed among others than miners during the growing season. As a matter of fact, mine drain waters were almost invariably discharged into the small streams, together with the stamp mill "tailings," which are heavily laden with pulverized rock. The latter accumulates along the banks of the streams in firm

deposits which are quickly dried by sun and wind, thus making very difficult the existence of hookworm larvæ carried down with this heavy sediment and firmly incorporated in the drying and hardening deposits of the same.

IDENTITY OF SPECIES

Owing to the lack of control over the patient during the course of treatment, it was found very difficult to secure specimens of the adult worms being passed. However, during the re-survey in 1917, an attempt was made to collect adult worms from selected men employed in some of the mines. When given the series of doses of medicine with directions as to when and how to take them, the patient was also supplied with a gauze net (medium mesh) about 14 inches square which was provided with a string of about the same length, attached to each corner. These strings were secured to opposite ends of two small sticks, each about ten inches long, which were intended to serve as handles with which to lift the net and contents from the bowl of the toilet and wash the bulk of the feces collected through the meshes with water by alternately elevating and lowering the handles over the bowl of the toilet. In case of one mine where there was a dispensary situated near the "collar" of the main shaft, the placing of the net in the bowl of the toilet and manipulating of the same with water afterwards was done by an attendant, the vermifuge having been administered by the mine physician. Where the treatment was taken by the individual at home, he was instructed how to use the net and told to wrap it (wet) securely in heavy paper after washing as directed and return it the following morning to a place designated at the mine.

In this way, during the winter and spring of 1917, 70 adult specimens were secured from 14 different miners. One of these men was a Castilian, who had left Spain only four months previously. He showed a very marked anemia and his first stool after treatment contained considerably more specimens of *A. duodenale* than were separated. Only one specimen of *Necator americana* (female) was secured, and this came from a patient showing a number of male specimens of *A. duodenale*. This would seem to indicate quite clearly that the prevailing species was *A. duodenale* and that *N. americana* only occurred in an occasional case. Out of the 63 identificable specimens, 39 were found to be males and 24 females, thus giving a decided predominance of males. The largest number of specimens secured from one individual was 20, which indicates the comparative low degree of infection existing among the men at this time. During the course, however, of the first diagnostic survey made by Cumming and White in 1916 and previously according to the testimony of local mine physicians and others, the infection must frequently have been much more severe, judging both by the accompanying anemias and number of adult worms, said to have been found in the stools passed after the administration of the vermifuge, which was thymol in practically all cases treated at those times.

RESULTS OF TREATMENT

The marked reduction in both the total percentages of men infected and the severity of individual infections already alluded to which occurred during the interval of six months elapsing between the diagnostic surveys of 1916 and 1917, may be attributed largely to changes in and instability of labor brought about by the general strike which occurred during the fall of 1916. Treatment of infected men could have had comparatively little influence as a factor in bringing about this reduction, since only a small percent of infected men submitted to treatment which could not be controlled owing to the lack of authority and dispensary facilities. The rapid turnover in the personnel resulting from the voluntary and involuntary exodus of old, highly infected employees, and the importation of new blood (largely free of infection)

does, however, in my opinion, constitute the most important factor, which will supply an adequate explanation of these quantitative differences in diagnostic results and apparent therapeutic success, otherwise most difficult to account for. The method of diagnosis, namely centrifugation as described by Cumming,[10] was followed in all cases. This is by no means faultless as shown by frequent comparisons with the direct slide and the Loos cultural methods. However, the possible discrepancies are not serious when large numbers of examinations are being made as has been shown by contrasting the results of the 1916 and 1917 surveys with those of subsequent surveys made in both the "Grass Valley" and "Mother Lode" mining districts. In the latter diagnostic surveys the culture method was used but actual statistics are not available to the author.

Regarding treatment following the resurvey made by me in 1917, nothing of an encouraging nature can be said since it was conducted as before but with less apparent success. Later ankylostomiasis occurring among miners of California was made a compensable disease by the State Industrial Accident Commission and the management of the State Insurance Fund agreed to treat all discovered cases under supervision until cured of the infection.

SUMMARY AND CONCLUSIONS

1. Anemia formerly so common among "Mother Lode" miners in California has been shown to be due almost exclusively to hookworm infection.

2. The California State Board of Health, in coöperation with the Federal Bureau of Mines, undertook a systematic survey of "Mother Lode" miners in 1916, which resulted in demonstrating the seriousness of ankylostomiasis among underground workers in this locality.

3. The Bureau of Communicable Diseases of the California State Board of Health began in the winter of 1916-17 a more comprehensive survey and detailed investigation of hookworm infection among miners and soil infestment in various mines of California with a view to the control and ultimate eradication of the same.

4. The above mentioned survey and investigation in 1916-17 was conducted by the author, his purpose in the latter being not only to throw more light on the extent, topography and "demic" character of the disease but also to show how infection may be disseminated through mines, how and where the disease is usually contracted and to establish the apparent fact of endemicity in some instances and its absence in others.

5. The results of the author's observations and investigation were as follows:

(a) Endemicity of hookworm infection in mines is dependent not only on favorable conditions of temperature, relative humidity, mine drainage and chemical character of mine drain water but also on the particular circumstances and conditions existing relative to mine pollution with ova-laden feces.

(b) The use of mine water catchment devices and storage tanks, reservoirs, etc., to receive the evacuations of men while underground, may be responsible for a high incidence of ankylostomiasis among workers.

6. Nematode larvæ, resembling hookworm larvæ morphologically, were isolated from mine soil in a certain crosscut in mine "A," and it was proved subsequently by infection of puppy-dogs in this same locality that hookworm larvæ capable of development into adult *A. duodenale* were actually present in the mine soil.

7. Ankylostomiasis among California miners has centered largely in a few of the deepest gold mines situated along one section of the "Mother Lode" in Amador County.

8. Surface infection did not exist in the vicinity of "Mother Lode" mines since practically all cases of ankylostomiasis discovered among surface workers were traceable to contact in mines with infested mine soil or drain water.

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□

Score Cards in Three Colors.—The value of score cards for improving the conditions of food establishments is generally recognized; perhaps, in some cases, over-rated. To obtain full value from their use it is necessary for the general public to understand their purpose and to be able to see them easily. As few people would have the courage to go inside of a store or restaurant, look at a card and turn around and leave if the score were unfavorable, cards should be posted so that people can see them before entering.

In order to meet this condition the County Board of Health of Morgan County, Ala., passed, on request, a regulation requiring that all score cards be posted in the show windows of places scored. The cards used are of three colors—white for good scores, blue for fair and red for poor. As a result of the passage of the regulation and the use of the colored cards, it is possible for people to see from across the street in what condition an establishment has been found by the inspector. A scramble on the part of proprietors to put their places in order and what appears to be a real effort to keep them in good condition has followed the introduction of this plan.

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EPIDEMIOLOGICAL RÔLE OF THE CASE OF CEREBRO-SPINAL MENINGITIS*

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That carriers are not the infecting agent in most cases of cerebro-spinal meningitis is suggested. It does not seem probable that meningococci are present in the naso-pharynx of premeningococcus cases in numbers large enough to be a menace. These findings rest on negative results of swabbings taken shortly before the onset of the disease.

THE epidemiological rôle played in a community or hospital by persons who subsequently develop epidemic meningitis is one of importance and one about which we have very little real information. When a case of meningitis develops, the physician is immediately confronted with the problem of quarantine and he must, rather empirically, determine the period of time necessary for the isolation of the case, and also of the contacts of the case. It has been the practice in some hospitals, at any rate, to remove the case from the ward and place both the patient and the contacts in isolation. The contacts are then routinely swabbed and such carriers as may be detected are segregated for treatment. This procedure cares for all positive cases as well as all positive carriers, but the problem still remains as to what course should be followed in regard to the non-carrier contacts.

The incubation time for the development of meningitis is not known so it is impossible to hold these contacts a definite number of days and then release them with any assurance that no further cases will develop. If, however, evidence should be obtained indicating that the case of meningitis that had developed in the ward had not contaminated the others, the contacts might be observed for a few days for the possible development of additional cases, and then all negative contacts might be dismissed. Suggestive evidence has been obtained regarding this problem during a recent outbreak of meningitis, and it is this evidence that is here presented.

It is commonly supposed, that the infecting organism in the transmission of meningitis is conveyed from one person to a second by means of the secretions from the nose and mouth. The majority of other diseases transmitted in this manner are most infectious during their onset. By analogy we are led to suppose, then, that this disease is also most infectious during the prodromal stage. This, if true, would be of great moment in the subsequent handling of the contacts. Further, this danger if real, would be multiplied many times in the case of a patient admitted to the wards of a hospital with an acute infection of the upper respiratory tract, since in these cases the coughing is more constant and the secretions more abundant. The opportunity is rarely afforded for studying bacteriologically cases which subsequently develop meningitis. Evidence of a negative character obtained from such a study, while not entirely convincing, is at least highly suggestive. It is evi-

*Compiled from data obtained at U. S. A. Army Hospital No. 33, Portsmouth, England.

dence of this suggestive character that may be deduced from this series of cases.

An opportunity was recently afforded for the bacteriological study of a group of persons for the meningococcus by means of routine post-nasal swabbing. This study included 48 persons in one ward of a military hospital, who were suffering from a mild type of influenza. One case of epidemic meningitis developed, and the entire ward was placed in isolation while bacteriological cultures were made. Routine post-nasal culturing was done upon every person in this ward for the detection of carriers.

The technique employed was that suggested in the U. S. Army pamphlet, "Standard Technique of Meningococcus Carrier Detection" employing the Mathers swab. Sterile wooden tongue depressors were used in order to obtain a good exposure of the throat and to insure the least possible contamination from the saliva. The material obtained on the swab was immediately smeared upon one side of a fresh, warm, laked rabbit's blood agar plate. Later these plates were smeared from the point of inoculation with a sterile platinum wire. They were then incubated at 37°C. for 24 hours and all suspicious colonies picked to plain glucose agar slants. After incubation these growths were examined in stained films and all Gram negative diplococci agglutinated against polyvalent meningococcus serum (Rockefeller Institute) and at the same time against the four specific type sera (C. S. F. Central Laboratory, London). Agglutination readings were made after 24 hours incubation at 55°C. The technique employed is given in some detail to assure the reader that a standard method of examination was employed.

The swabbing of the 48 contacts was done on the day following the appearance of one case of meningitis. The results obtained from this examination are given in the following table.

Person in isolation	48
Persons examined	48
Cases of meningitis	1
Carriers detected	1
Persons later developing disease	9

It will be seen from this table that the actual number of persons acting as carriers at this time was small, in fact, no more than might be found in a similar group of persons taken at random. It would seem then, that the number of persons actually contaminated by this case at this time was negligible, since the carrier rate was not unusual. On the day of the culturing, one new case of meningitis developed and on the following day one additional case developed. On the second day after the swabbing, five additional cases developed. On the third day one more, while the last case to develop in this group appeared twelve days later.

Case No.	Date of Swabbing	Date of onset of disease	Interval in days	Result of Swabbing
1.	(Original case)	Oct. 4, 1918		
2.	Oct. 5, 1918	Oct. 5, 1918	0	Negative
3.	" " "	Oct. 6, 1918	1	"
4.	" " "	Oct. 7, 1918	2	"
5.	" " "	Oct. 7, 1918	2	"
6.	" " "	Oct. 7, 1918	2	"
7.	" " "	Oct. 7, 1918	2	"
8.	" " "	Oct. 7, 1918	2	"
9.	" " "	Oct. 8, 1918	3	"
10.	" " "	Oct. 17, 1918	12	"

It seems quite unlikely that the incubation period of the disease is short enough to suppose that these cases developed as a result of contamination from the initial case since only two and three days intervened. It is more likely that the entire group had been contaminated at about the same time from some other source, possibly the carrier which was detected. It may be unfair, however, to suppose that the one carrier found was the source of infection for the entire group. These patients while associated with the carrier had for some time previously also been associated equally intimately with many other persons who were not subjected to examination as they were not admitted to the hospital as patients.

Since the first case to develop after the examination occurred on the same day as the swabbing, the plates were examined with unusual care. Every colony that was at all characteristic was picked and inoculated on glucose agar slants. Stained films from these subcultures, after proper incubation, were carefully examined. All Gram negative diplococci

were emulsified and tested by agglutination. In spite of the additional care in the examination of these plates, no meningococci were found in any of the nine cases.

It would appear, therefore, that the nasopharnyx does not harbor the organisms, at least in large numbers, during the period immediately preceding the onset of the disease. It is further suggested that carriers and not cases are the source of spread of the disease, by the fact that the organisms are found in immense numbers in the naso-pharnyx of carriers and also by the fact that contacts of a sporadic case rarely develop the disease. Fildes and Baker had 485 proven carriers under observation for a considerable time and not a single case of the disease developed. Flack* reports only four cases of the disease in his group of 185 carriers.

Fildes and Baker† in 1917 reported 26 cases which they had examined by post-nasal swabbing at varying intervals prior to the onset of the disease. In none of the 26 cases did they obtain positive cultures. Their report comprises cases observed at periods varying from 2 to 75 days before the onset of the disease. The series contains only one case examined as close as the second day. In the series presented in this paper, five cases were examined two days before, one, one day before, and one on the same day the disease first appeared. Since only a few hours elapsed before this last patient complained of definite meningeal symptoms, this case can be interpreted as an examination made at the very onset of the disease. In the present series, eight cases were examined in the prodromal or early stages of the disease.

It seems quite probable that if meningococci were present even in small numbers in the naso-pharnyx, prior to the onset of the disease, they would have at least been found in a certain number of these cases. Therefore, it seems probable that the organisms are either not present in the naso-pharnyx prior to the onset of the disease, or that they are present in extremely small numbers. Certainly if they are present in too small numbers to be found by careful post-nasal swabbing, they are not present in numbers sufficiently large to prove a source of danger to the contacts of the case. Further evidence of this is obtained from the fact that while most of the inmates of this ward had been in close association with these cases during the incubation stage of the disease, still the carrier rate was very low, only one carrier being found in the entire ward. While those in this ward had been closely associated with the persons who developed the disease they are only a small part of the original group. So it is impossible to arrive at the carrier rate present in the large group from which these 48 cases came. It is evident, though, that the carrier rate in this smaller group, which had been contacts of these cases during the few days preceding the onset of the disease, had not been altered. That is to say, the contamination of contacts of these cases had not occurred.

SUMMARY

These results seem to indicate:

1. That the meningococci are received into the naso-pharnyx in very small numbers in these cases in which the disease develops.

2. That they must rapidly pass into the meninges or the circulation.

3. That carriers and not cases furnish the source of infection in most instances.

4. It seems unlikely that the meningococci are present in the naso-pharnyx of premeningococcus cases in numbers sufficiently large to prove a menace to those associated with them, even when other infections of the upper respiratory tract are present.

*Flack, M., Bacteriological studies in the pathology and preventive control of cerebro-spinal fever among the forces during 1915-16, Brit. Med. Research Comm.; Special report series, No. 3, p. 59.

†Fildes, P., & Baker, S. L., The relation of the case of cerebro-spinal fever to the positive contact, Lancet, London, 1917, II, No. 4912, p. 602.

ROCHESTER, N.Y., TONSIL-ADENOID CLINIC AND HOSPITAL

Rochester, N. Y., has developed an allied clinic and hospital for tonsil and adenoid operations that is worthy of notice.

Since the opening of the Eastman Dental Dispensary in 1917, Rochester has enjoyed the privilege of having its children's teeth cared for by experienced dentists. Not only has this work been done, but the city has enjoyed an equally rare and important privilege in having the children educated in the hygiene of the mouth and the proper and frequent use of the toothbrush.

Along with the work of dental hygiene in the Dental Dispensary there are two sections, a Nose and Throat Section and an Orthodontia Section; and these sections, under their director, are responsible for the organization, growth and development of the first Tonsil and Adenoid Clinic on a scale limited only by the capacity of the Dental Dispensary to perform the necessary operations. Out of this came the larger Allied Hospital Tonsil and Adenoid Clinic and the tonsil and adenoid clinics in all the hospitals.

When the Dental Dispensary got under way in the early years of its organization it was found that large numbers of children had to have certain tooth straightening or orthodontic work done. As the cases of tooth-straightening increased in number, the Director of the Dental Dispensary, Dr. Burkhart, and the nose and throat surgeon, Dr. Ingersoll, were asked by the Donor of the Dispensary the reason for the large number of children with crooked teeth, mouth, face and nose deformities. The answer given by the staff to this question was that facial and dental deformities were frequently produced by nose and throat defects known as enlarged and infected tonsils and adenoids. Aside from the question of crooked teeth, still further inquiry showed that nearly 2,000 children had been listed in the schools for tonsil and adenoid operations, but hospital facilities were not then sufficient to care for such large number of operations, and the large number to be found when all Rochester children were examined.

The Donor, Director and Surgeon immediately turned their attention to providing the means whereby it might be demonstrated whether the parents of Rochester's

One would hardly believe that these children are in a hospital ward waiting for an operation. Such is the comfort of music and "movies."

children would seize the opportunity of having their children relieved of their obstructing and infected tonsils and adenoids if that opportunity were provided and presented to them.

In the summer of 1920 a summer tonsil and adenoid clinic was established in the Dental Infirmary by increasing its bed capacity to take care of 40 children a day on five operating days a week. This work was carried on for about seven weeks and 1,470 children were cared for without a mishap. A special report of this work has been published. So popular was the summer clinic that when it closed it had still listed for operations about 2,000 patients. With such evidence of the appreciation of the work by the citizens of Rochester it was proposed to continue the work during the winter and on a much larger scale.

Mayor Edgerton offered Convention Hall Annex, a commodious building well adapted for emergency hospital purposes. A committee was formed of the directors of the various hospitals, representatives of the public and parochial schools and of health. The Community Chest agreed to finance the undertaking. At the same time each of the four hospitals, the General, St. Mary's, Homeopathic and Hahnemann expanded their facilities so that all told there should be done approximately 560 operations each week. The children operated on are school children and children of pre-school age.

The children are gathered through a tonsil and adenoid survey conducted by the physicians and nurses in the schools, and they are divided into groups according to the urgency of their needs. They are furnished with "consent" cards to be signed by the parents, appointments are made and the parents conduct them to the particular clinic to which they are assigned. In the first three weeks of the winter clinics more than 1,600 children have been operated on without any mishap. The technic of handling them is to have them report to the clinics at two in the afternoon of the day preceding the operation. They are checked, numbered, cleared, bathed, examined, put into clean night clothes, bed slippers and a blanket and put to bed to the delights of movies and record concerts. The children are kept over the second night and returned to their homes in taxies the following morning.

Typical group of children at the Rochester Tonsil-Adenoid Clinic.

The work has spelled opportunity for Rochester's children. Every child, no matter what the circumstances of its parents, has been given an opportunity to have its teeth properly cared for, to have its tonsils and adenoids removed and so to defend the

chief portals of entry, the mouth and nose, against disease.

This piece of work has been on a large scale, unusually large even for these ambitious days, but aside from the good actually accomplished in the betterment of the health of the children there has been the awakening of the spirit of the community and its enlightenment will serve to make possible a continually improving health condition in the future.

The parents of Rochester have had an opportunity to do a great piece of work for their children. They have responded to the invitation and the opportunity by thousands, and more thousands of children will go to the clinics for their health's sake, to the end that they may demonstrate that "life is not to live but to be well."

Leaving the Hospital.

Little patient absorbed in the movies.

See Note on the Front Cover about papers for the New York Meeting of the Association. Programs are already quite well in hand. May 25 is approximately the late date for offering papers.

EDITORIAL SECTION

AMERICAN JOURNAL OF PUBLIC HEALTH

Publication Office: 124 W. Polk Street, Chicago, Ill.
Editorial Office: 169 Massachusetts Ave., Boston, Mass.

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WHY NOT SAY, "A COMPLETE EXAMINATION"?

The outlook of medicine is broadening and the industrial conditions of the worker have become the object of much medical interest. The hygiene of industry is a popular topic. Industrial clinics are being organized. Those concerned with the hygiene of industry seem, however, to have lost sight of one important factor, namely the worker himself. Attention is paid to his respiratory apparatus, his blood, his heart, kidneys and other organs, but little attention is paid to the individual who contains these organs. Little attention is paid to the other factors which enter into his constitution, his instincts, his emotions, and the other complex mechanisms which make him what he is. Yet the instinctive equipment of the man is as much part of his constitution as his circulation; his satisfactions and dissatisfactions, his ambitions, his unrest and discontent are as much an expression of his nature as his muscular force or his pulse rate. Industrial hygiene rarely makes any reference to these more complex manifestations of life. Again and again in the literature dealing with the organization of industrial clinics we find emphasized the necessity of a "complete *physical* examination." Why not talk of "a complete examination"? What is the meaning of the introduction of the word physical? It means that an incomplete examination of the worker is to be made; an examination which leaves out of account all the factors which make up the personality, the constitutional traits, the ability to get on with his fellows, the balance between the self-assertive and the social trends of his nature, the ability to face facts squarely and straighten out situations as they arise, instead of indulging in empty day dreaming and cherishing grudges, the ability to keep on doggedly at a task, instead of flitting from job to job, the responsiveness to social demands such as those of honesty, truthfulness, decency and loyalty. All these reactions of the individual are manifestations of his living essence, more intimately concerned with his happiness and his social value than many cardiac

or gastro-intestinal conditions. Yet they are avoided and constantly ignored in the ordinary discussions on industrial hygiene. It is time, therefore, to emphasize strongly the necessity in industrial clinics of making a "complete examination" and not merely a "complete *physical* examination"; of examining the worker and not merely the worker's organs; of paying attention not only to complaints of pain or weakness, but to complaints of depression, uneasiness, morbid sensitiveness; of observing not only a change of complexion, but a change in the behavior and in the moods of the individual. To some this may appear abstract or they may not know how to begin. It certainly involves more than a routine physical examination and requires special training; the physician needs to know the principles of mental hygiene, needs to have some psychiatric experience. He cannot cover the necessary ground personally, but has to organize a skilled personnel accustomed to study human reactions and to analyze the situations, which involve stress and strain. Such a personnel means social workers accustomed to deal with psychiatric problems, that is, with patients whose sickness cannot be expressed in terms of one organ or tissue, but whose disorder is a failure of adaptation to the stress and strain of a definite situation, the treatment of which disorder may involve modification of the situation and a change of attitude towards personal problems. An industrial hygiene which takes cognizance of the whole worker may contribute greatly not only to output and efficiency, not only to the elimination of certain physical diseases, but to the happiness and stability and social value of the working personnel.

C. MACFIE CAMPBELL.

HAVE YOUR WATER SUPPLY INSPECTED AS WELL AS ANALYZED

State laboratories and others that undertake the analysis of waters are often careless in reporting upon the results of analyses. The reports are frequently sent out with such comments as the following:

"This analysis indicates the water to be safe for drinking purposes"; "this water is potable"; "this water complies with the standards of the Treasury Department for Interstate Carriers and, therefore, is safe for drinking purposes." The invariable popular deduction from such legends as these is that the water may be used with perfect safety. As a matter of fact, the analyst knows quite well that the results of analyses apply only to the individual specimens examined and that it is practically impossible to determine whether the water is safe unless the analysis is accompanied by an inspection of the source of the water. Some laboratories persist in making the reports similar to the above even when previous analyses have indicated the water to be of doubtful quality. Mr. H. A. Whittaker, in a paper presented before the Engineering Section of the American Public Health Association in 1915, showed in a most striking and conclusive manner the great importance of an inspection of the source of supply as an element in determining whether the water is suitable for drinking purposes.

Notwithstanding all that has been said at various times and in various ways about the limitations of water analysis and the fact that an analysis can be accepted as only one point of evidence regarding the quality of water, such misleading reports on the part of analysts still continue. To avoid giving a false sense of security, analysts should be very careful to state that the results of analysis apply only to the particular sample and that the continued purity of the supply can be insured only by its adequate protection against pollution from all sources. Analysis alone may give false security.

P. H.

A. P. H. A. HEADQUARTERS REMOVE TO NEW YORK CITY

On May 1, 1921, the office of the Secretary of the A. P. H. A. and the business headquarters will be removed to the Penn Terminal Building, 370 Seventh Avenue at 31st Street, New York City. Letters addressed to the Secretary or concerning membership or general business should thereafter be sent to the new address.

The Editorial offices of the JOURNAL and NEWS LETTER will remain in Boston at the present address for about three months to come. Letters or communications for them should be sent as now, to 169 Massachusetts Avenue, Boston 17, Mass.

Reasons for the removal given in this issue of the JOURNAL, page 463.

REQUEST FOR JANUARY (1921) JOURNALS

The demand for the JOURNAL for January, 1921, has been so great that the reserve stock in the possession of the Association is exhausted. In order to supply future demands the Association will be glad to have any members who do not bind or preserve their sets, return this number. Twenty-five cents will be paid for copies of this issue returned to the Editor, American Journal of Public Health, 169 Massachusetts Avenue, Boston 17, Mass.

CORRECTIONS

In the symposium on narcotic drug addiction, appearing in the January, 1921, issue of the JOURNAL, in an article signed by Dr. C. E. Terry, appeared a statement quoted from the Los Angeles *Examiner* to the effect that the Worth Street Clinic of the New York City Health Department had been closed by Commissioner Kramer. This statement has been declared by the New York City Health Department to be untrue. A letter to Commissioner Kramer brings the reply that the article in the Los Angeles *Examiner* was incorrect and that the Worth Street Clinic was not closed by him, but by the New York authorities themselves.

In the same symposium appeared a review by a member of the staff of the JOURNAL entitled "Some General Facts." In speaking of the paper by Pellini and Greenfield, the following statement was used: "The authors of this article have drawn conclusions that have been interpreted by them and by others to mean that narcotic drug addiction has no basis in physical fact, but is merely a habit of vicious indulgence."

One of the authors, Mr. Greenfield, writes that this statement does not strictly represent the conclusions of the authors, and in accordance with his request the following conclusion referred to is quoted:

"1. We consider that the definite conclusion to be drawn from our work which, so far as we know, is the only work of this nature directly testing the question of immunity acquired by the human morphin addict, is that no substance is formed in the blood serum of a human being who has acquired a high tolerance to morphin, which is capable of conferring any degree of immunity to the toxic action of morphin on an animal into which it is injected.

"2. Likewise we have been able to show that the blood of a tolerant animal does not contain any protective substance against morphin."

In the same article the JOURNAL quoted verbatim an extract of the Bulletin of the New York Medical Association for October, 1920, relating to the Cotillo Bill. Some of the statements of the *New York Medical Journal* are denied by Dr. Wendell C. Phillips of New York City, from whose letter we quote: "This bill was unanimously endorsed by the House of Delegates of our State Medical Society, and I am sending you a copy of it . . . from which you will see that

it does not, as stated in the article, 'deprive physicians of the right to treat cases of drug addiction at any stage of this disease except under institutional restraint,' but permits them to treat such cases freely by personal administration of narcotics, or by any form of treatment which does not involve placing narcotic drugs in the possession of the addicts.

"Dr. E. Elliott Harris, who was chairman of the special committee of the American Medical Association, was also delegated by the New York County Medical Society to represent it at the hearing on this bill. He took pains to make it perfectly clear that he appeared only in the latter capacity and as Speaker of the House of Delegates of the State Society, and not as chairman of the A. M. A. committee, so the statement that the special committee of the A. M. A. appeared in favor of the bill is not true." EDITOR.

COPYRIGHT NOTE

The original of the excellent portrait of General Gorgas in the March issue of the JOURNAL is from the studio of Harris and Ewing of Washington, and is copyrighted. The page should have borne the legend, "Copyright, Harris and Ewing." The apologies of the JOURNAL are due to this enterprising Washington studio.

BOOKS AND REPORTS REVIEWED

Creative Chemistry. *Edwin G. Slossum, M. S., Ph. D., New York: The Century Company, 1920. Pp. 308; illus.*

In this book the author relates in a remarkably interesting style the romance of industrial chemistry. Such processes are taken up as "Feeding the Soil," "The Race for Rubber," "Fighting with Fumes," "Synthetic Perfumes," the manufacture of sugar, the wonders of the electric furnace, etc.

Dr. Frank Crane says of the book, "The book is tremendous. It is an epoch. It is knowledge made beautiful, facts transformed to fairies."

Anyone desiring to read concerning the report of industrial progresses in a popular interesting style will thoroughly enjoy this book. A. W. H.

✚

A Diabetic Manual, for the Use of Doctor and Patient. *Elliot P. Joslin, M. D., Harvard Medical School. Philadelphia: Lea and Febiger. Second edition. Price $2.00. Pp. 191.*

Dr. Joslin's recent announcement *(Journal American Medical Association,* Jan. 8, 1921*)* concerning the prevention of diabetes by preventing obesity, must have struck a warm note in the bosom of all interested in the reduction of that large group of diseases of adult life which includes diabetes. The physician must caution those of his patients whose girth is increasing that superfluous weight is a dangerous burden to carry into adult life. A clinician of note has aptly remarked that "obesity indicates a flabby will."

In the preparation of this book Dr. Joslin had a definite object—to make it serve as a text-book for the physician to use in the education of his patients. For it is in the education of the patient and with his coöperation that diabetes can be controlled. The book has been revised to keep pace with the advances recently made in the treatment of this disease. The subject is lucidly presented from the prophylactic, hygienic, dietetic and symptomatic standpoints. The dietetic treatment is described in sufficient detail to make it readily available to those who must treat these cases. Many dietetic suggestions, recipes, menus and diet tables are presented. A chapter is devoted to the laboratory tests which are

useful in diabetic treatment. Those who read this book will find that the dedicatory note, "To help make the home safe for the diabetic is the object of this book," has been practically fulfilled.

D. GREENBERG.

✚

Insects and Human Welfare. *Charles Thomas Brues, Assistant Professor of Economic Entomology, Bussey Institution, Harvard University. Cambridge: Harvard University Press, 1920. Pp. 104. Price, $2.50.*

It is at least ten years since Professor Brues essayed to fix the responsibility for infantile paralysis on *Stomoxys*, and in the intervening decade he has widened his field of investigations of relations of insects to disease.

The present volume is one of segregation of the salient facts of the relationships of insects to man brought up to date. Public health leads in the group of subjects, and here in successive short discussions are considered malaria, yellow fever, dengue, and Mediterranean fever, ascribed to the mosquito, while the fly is placed where it belongs as a potential health risk. Foreign flies are described and the manner in which they carry diseases. Ticks and fleas and lice are likewise outlined in their relationships to human health. The chapter contains the essentials to the good understanding of the present situation in the whole matter. A second section of the little book is devoted to out-of-door economic aspects of insect destructiveness, while a third chapter discusses household pests.

There is a good deal to interest the health officer in Professor Brues' book. He states conclusions from time to time that are helpful. He speaks of the attitude of the people towards the housefly as becoming more and more closely a realization of the injury it can do, and notes that public education is nearly at the point where concerted action may be taken against it. He calls attention to the absurdity of the old-fashioned notion that all created things are beneficial to man, and asserts that some insects are decidedly harmful. No two insects are to be dealt with in the same way, so that the task on the entomologist is an important one, in order that the world may not waste its endeavors in the wrong kind of suppression. He predicts a future field of increasing usefulness in the medical side of entomology and forecasts the need of much research here. The old barriers that kept insects limited to comparatively small areas are broken down, and they can avail themselves further of the most modern means of travel. Diseases, therefore, may be extended in their range as the insects migrate.

The book has many excellent illustrations and brings together widely scattered information through diagrams on distribution, seasonal prevalanece and the like, which is interesting and timely. R.

✚

Report of the Improvement of the Water Supply of New York City. *New York. Frank E Hale. (Manuscript.)*

Sanitary engineers and others interested in the subject of water purification in its relation to public health will find interesting material for study in a report which is made available through the courtesy of Dr. Frank E. Hale, of the New York City Department of Water, Gas, and Electricity, who has compiled this excellent material.

The report is in typewritten form and only a limited number of copies are available for loaning purposes. The material includes, among other things: (1) chronological table showing chemical and bacteriological analyses of water corresponding to changes in water supply; (2) comparative table with analyses for *B. coli* content and typhoid rate for the three leading boroughs; (3) table giving typhoid and diarrheal death rates for each borough and for the entire city, with additional data concerning the effect of the improved water supply upon the typhoid rate; (4) comparative charts, with accompanying brief description, showing typhoid and diarrheal rates for each borough and for Greater New York, and with *B. coli* content given for the three leading boroughs; (5) distribution maps, one indicating the present water service, and the other showing the sources of the municipal water supply of 1915.

The report contains an exhaustive list of all measures adopted to improve the supply during the past ten years. Especial attention has been paid to chlorination.

ASSOCIATION NEWS

REMOVAL OF A. P. H. A. OFFICE TO NEW YORK CITY

In conformity with the vote of its Executive Committee, the American Public Health Association is to move on May 1 to New York City, where its address will be Penn Terminal Building, 370 Seventh Avenue, at Thirty-first Street, New York City.

Members of the Association will be interested in the reasons underlying this change of base. A short time ago the news was circulated of the formation of the National Health Council, in which the A. P. H. A. was one of nine or ten associations to coöperate in health matters. As the result of the formation of the Council it has seemed well to bring the associations into actual contact so far as their official headquarters are concerned. For this reason eight national associations or committees, together with a liaison office of the U. S. Public Health Service and the office of the National Health Council itself, have engaged quarters on the 15th and the 16th floors of the Penn Terminal Building in New York. These agencies are the following:

Fifteenth Floor:

American Social Hygiene Association.
National Committee for Mental Hygiene.
National Organization for Public Health Nursing (with the American Nurses' Association and the League for Nursing Education).
National Tuberculosis Association.

Sixteenth Floor:

American Public Health Association.
Bureau of Social Hygiene.
Child Health Organization of America.
Social Hygiene office of the Women's Christian Temperance Union.
National Health Council (with the Common Service Committee), New York office.
United States Public Health Service (Liaison office).

In the same building is the Federal Board of Vocational Education, and other agencies considering adjoining space are the American Society for the Control of Cancer and the Committee for the Control of Drug Addiction.

A Common Service Committee has been established which is planning to offer certain optional mutual services such as telephone, stock room, shipping facilities, rest room and lunch service, multigraphing and addressing, etc., and a joint library service is under consideration, together with some method of pooling the stenographic and typewriting work.

The National Health Council, organized on December 10, 1920, is composed at the present time of ten member organizations which have representatives in its management. A national headquarters office has been established at 411 Eighteenth Street, N. E., Washington, D. C., and in addition there will be the coöperative office in New York. The officers are: Chairman, Dr. Livingston Farrand; Vice-Chairman, Dr. Lee K. Frankel; Secretary, Dr. C. St. Clair Drake; Acting Treasurer, Dr. William F. Snow, and Acting Executive Officer, Dr. Donald B. Armstrong.

As suggested in the Editorial Note on page 460, letters to the Secretary of the A. P. H. A. or communications with reference to membership or general business should be addressed to the new office,

AMERICAN PUBLIC HEALTH ASSOCIATION,
Penn Terminal Building,
730 Seventh Avenue at Thirty-first Street,
New York, N. Y.

Till further notice the Editorial Office will remain in Boston, and communications for the JOURNAL or NEWS LETTER should be sent to the present address,

AMERICAN JOURNAL OF PUBLIC HEALTH,
169 Massachusetts Avenue,
Boston 17, Mass.

□

Are you planning to go to the Fifteenth Annual Meeting of the A. P. H. A. in New York City, November 14-18, 1921?

LIST OF NEW MEMBERS

Proposed for Election to the

A. P. H. A.

March 5 to March 31, 1921, inclusive.

Names of Sponsors are set in **Bold Face Type.**

Names of New Members are set in Light Face Type.

ALABAMA

S. W. Welch, M. D., Montgomery.
George C. Marlette, M. D., County Health Officer, Bay Minette.

CONNECTICUT

John Ritchie, Jr., Boston, Mass.
William Hall Coon, M. D., Dept. of Health, Bridgeport.

ILLINOIS

John Ritchie, Jr., Boston, Mass.
C. O. Schneider, M. D., Commissioner of Health, Winnetka.
H. L. Woolhiser, Village Manager, Winnetka.

INDIANA

John Ritchie, Jr., Boston, Mass.
C. L. Bartlett, M. D., Dir. of Lab. for Clinical Diagnosis, St. Joseph Hospital, Mishawaka.

KANSAS

C. R. Silverthorne, M. D., Topeka.
Mrs. Clare Sherman Smith, Bacteriologist, Topeka.

MAINE

G. H. Hutchins, M. D., Presque Isle.
Percy E. Gilbert, M. D., Health Officer, Ashland.

MASSACHUSETTS

John Ritchie, Jr., Boston, Mass.
Mr. Harold T. Martin, Chicopee Falls.

W. C. Woodward, M. D., Boston.
Omaha Dept. Police, Sanitation & Public Safety, Atten. Mr. J. F. Edwards, Omaha, Neb.

MICHIGAN

W. C. Hirn, Lansing.
City of Petoskey, Atten. of City Clerk, City Laboratory, Petoskey.

NEW YORK

John Ritchie, Jr., Boston, Mass.
Municipal Reference Library, Atten. Rebecca B. Rankin, Librarian, New York City.

PENNSYLVANIA

John Ritchie, Jr., Boston, Mass.
Robert A. Keilty, M. D., Dir. Dept. Lab. & Research Med., Geisinger Memorial Hosp., Danville.

RHODE ISLAND

John Ritchie, Jr., Boston, Mass.
Henry G. May, Ph. D., Chief, Div. Animal Breeding and Path., Agricul. Exper. Station, R. I. State College, Kingston.

UTAH

A. H. Murray, M. D., Salt Lake City.
Cleve E. Kindall, M. D., U. S. Bureau of Mines, Houghton, Mich.

VIRGINIA

W. F. Draper, M. D., Richmond.
Rev. Herbert H. Young, Pres., Health Board, Kenbridge.

Robert A. Martin, M. D., Petersburg.
Louis Brownlow, City Manager, Petersburg.

WASHINGTON

R. J. Cary, M. D., Elma.
Dr. Frederick Slyfield, Seattle.

WEST VIRGINIA

A. J. Pickering, M. D., Huntington.
D. E. Musgrave, M. D., Barboursville.

EMPLOYMENT BUREAU

HELP WANTED

Help-wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the 5th of each month for publication on the 20th. Mail to Boston office as early as possible.

In answering keyed advertisements, please mail replies separately to editorial office in Boston, Mass. In replying give age, professional training, salary requirements, previous positions held and three or more references.

Wanted: Chief Bacteriologist for Public Health Laboratory in New England city of about 100,000 population. Must be capable of developing and carrying on the work of an up-to-date laboratory, including bacteri logi ıl diagnosis and milk and water examination. Salary $2,000. One assistant. Address 440, R. E. B., care of this JOURNAL, Boston address.

Wanted: Man with dairy school training; knowledge of chemistry and bacteriology of milk; ability to observe and make reports and recommendations relative to conditions in bottling plants. Salary to right man $2,400 to start. Address 437 D. D. W., care of this JOURNAL, Boston address.

POSITIONS WANTED

Position-wanted announcements will henceforth be carried in this column. The charge is $2 per insertion. Copy should be received at this office by the 5th of the month.

Supervisor of school hygiene, in city health department, desires new location offering more comprehensive program. Six years in public health work, including government, state and municipal connections in Europe, South America, Southern and Middle Western states. Can produce intelligence, initiative, energy and diplomacy in organization and administration of public

health activities. Complete data promptly submitted to interested parties. Address 151 B. V. R., care of this JOURNAL, Boston address.

Wanted: Position as Instructor or Assistant in school with a first-class Public Health course, with privilege of completing graduate work in Public Health. Several years experience teaching in secondary school and college. Qualified in Bacteriology and Sanitary Chemistry. Address 150 T. S. L., care of this JOURNAL, Boston, address.

Wanted: Statistical position with city or state health department, or private health or social organization. Five years' experience in statistical work, two years as head of a department. Competent to aid in installing new system. Address 152, H. E., care of this JOURNAL, Boston address.

Wanted: Position as public health officer or epidemiologist by a man who has had years of experience in the U. S. P. H. Service and in state and municipal health service. Holds the B. S., M. D. and D. P. H. degrees of Standard Universities. Address S. L. B., 153, care of this JOURNAL, Boston address.

CONVENTIONS, CONFERENCES, MEETINGS

April 27-30, Rice Hotel, Houston, Tex., American Society of Civil Engineers.

April 28, Boston, Mass., Massachusetts Association of Boards of Health.

May 2-5, Brooklyn, N. Y., New York State Medical Society.

May 2-7, Louisville, Ky., Institute for Health Officers and Public Health Nurses, and Kentucky Public Health Association.

May 3-5, Columbus, O., Ohio State Medical Association.

May 9-10, Indianapolis, Ind., Indiana State Health Association.

May 9-11, Coronado, Cal., California State Medical Society.

May 9-12, Lincoln, Neb., Nebraska State Medical Association.

May 9-12, Skirvin Hotel, Oklahoma City, Okla., Southwest Water Works Association.

May 10-11, Atlantic City, N. J., American Association of Physicians.

May 10-11, Pensacola, Fla., Florida Medical Association.

May 10-11, Laurel, Miss., Mississippi State Medical Association.

May 10-12, Concord, N. H., New England Division, American Nurses Association.

May 11-13, Des Moines, Ia., Iowa Medical Association.

May 16-17, Toronto, Ont., Can., Ontario Health Officers' Association.

May 17-19, Springfield, Ill., Illinois Medical Society.

May 17-19, St. Joseph, Mo., Missouri State Medical Association.

May 17-19, McAlester, Okla., Oklahoma State Medical Association.

May 18, Toronto, Ont., Can., Canadian Anti-Tuberculosis Association.

May 18-19, Hartford, Conn., Connecticut State Medical Society.

May 23-26, Congress Hotel, Chicago, Ill., American Society Mechanical Engineers.

May 25-26, Concord, N. H., New Hampshire Medical Society.

May 31-June 1, Boston, Mass., Massachusetts Medical Society.

June 2, Providence, R. I., Rhode Island Medical Society.

June 3-5, Boston, Mass., State and Provincial Health Authorities of North America.

June 6-7, Boston, Mass., Association of American Industrial Physicians and Surgeons.

June 6-7, Hotel Mizpah, Syracuse, N. Y., Central New York Public Health Association.

June 6-10, Boston, Mass., American Medical Association.

June 6-10, Boston, Mass., American Medical Editors' Association.

June 6-10, Hotel Hollenden, Cleveland, O., American Water Works Association.

June 14-17, Waldorf-Astoria Hotel, New York City, National Tuberculosis Association.

November 14-18, New York City, AMERICAN PUBLIC HEALTH ASSOCIATION.

PUBLIC HEALTH NOTES

Abstracts by D. Greenberg, M. P. Horwood, James A. Tobey and Homer N. Calver.

Findings of the Framingham Tuberculosis Demonstration.—The Framingham Tuberculosis Demonstration has brought to light answers to a number of vital questions concerning the control of tuberculosis. (1) The examination of thousands of people in Framingham indicated that approximately 1% were suffering from tuberculosis in an active form. Another 1% were classified as having arrested tuberculosis. (2) *How many cases should be under care?* The ratio of known active cases to annual deaths was found to be 9 or 10 to 1. (3) *What medical machinery is most useful to find tuberculosis cases?* This was found to be (a) routine medical examinations, (b) routine medical work in schools and factories, (c) an expert consultation service. (4) *What percentage of cases should be found in an early stage?* Before the demonstration the Framingham physicians were reporting 45% of their cases in an early stage. Since the beginning of the demonstration, of all the cases that have come under observation and treatment, 83% have been found in an early or hopeful stage of the disease. (5) *How many institutional beds are necessary for the treatment of tuberculosis?* There should be available at least one bed for every annual death. (6) *What constitutes a reasonably complete local community program for tuberculosis control?* Such a program would consist of adequate medical machinery for the detection and treatment of the disease, adequate nursing machinery (one nurse for every 2,000 of the population), adequate institutional provisions, an effective educational program, proper legislative provisions, including the prohibition of spitting, the control of incorrigible open cases. (7) *How many cases will escape early detection, even with adequate machinery?* The Framingham experience shows that at least 14% of the cases escape early detection. (8) *How many cases will die in spite of adequate treatment?* A minimum of 16% would remain as the irreducible standard for mortality. (9) *What is the cost of a reasonably complete tuberculosis program?* Framingham is now spending about $2 per capita per year from public and private funds combined. This amount of money will buy reasonably adequate pre-natal, infant and pre-school work; satisfactory school health work; industrial health work; special tuberculosis work along many lines and general community sanitation. (10) *What results may be expected?* For the entire demonstration period thus far a reduction of about one-third in the tuberculosis death rate has been obtained. For the year 1920 a reduction of about one-half under the pre-demonstration rate followed after four years of intensive work.—D. B. Armstrong, *Am. Rev. Tub.*, January, 1921, 847. *(D. G.)*

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Entire Farm Areas Freed From Bovine Tuberculosis.—A noteworthy development in bovine tuberculosis eradication is the tendency to free from that disease areas containing many farms. The annual report of the Bureau of Animal Industry, United States Department of Agriculture, just issued, lists the following regions, which made tuberclin tests of all cattle within their boundaries during the last fiscal year: Clay County, Miss.; Island County, Wash.; Clatsop County, Ore., and the District of Columbia. Department officials believe that eradication of tuberculosis will proceed more rapidly, even than in the past, when it is taken up on the area basis.

Altogether 695,364 cattle were officially tested for tuberculosis during the last fiscal year. Of these 28,616 reacted and were removed from the herds. These figures are reported by the United States Department of Agriculture in a résumé of activities in coöperation with various states for the eradication of bovine tuberculosis.

The number of herds accredited as free from the disease was about three times as large at the end of the year as at the corresponding time a year ago. The records also show that in addition to the 3,370 accredited herds, 16,599 other herds passed the first official test, no reactors being found.—*News Letter*, U. S. Dept. of Agriculture, Jan. 5, 1921 *(J. A. T.)*

Special Treatment Clinics for Venereal Diseases.—The *Public Health Journal* (Toronto, Ont.), in its issue for March, 1920 (Vol. XI, No. 3) outlines the proposed special venereal clinics which it is the intention of the Provincial Board of Health to assist local boards in establishing. These present a well-digested plan, the details of which may be of value to health officers in this country who are undertaking to establish local clinics. The Provincial Board feels that the choice of a site for the special clinic or clinics should be left to a certain extent in the hands of the local authorities who understand local conditions. It would suggest, however, that where facilities already exist, as in the case of hospitals, etc., other things being equal, these facilities should be used. The Board will afford the following assistance to each clinic established:

1. For the purchase of furnishings and apparatus for a special clinic, $1,000.
2. For each out patient treatment for gonorrhea.....$0.50
   For each out patient treatment for syphilis..... .50
   (No more than one treatment each day will be paid for.) For each out patient treatment for syphilis in addition, free "salvarsan" will be provided —as soon as the Board is in a position to furnish its own product.
3. In the case of patients treated in the hospitals the sum of $0.25 in addition to the foregoing grants will be paid to the hospital for each day of indoor treatment up to three months, at the end of which time the indoor grant will cease.
4. The sum of $500 towards the maintenance of a social worker.
5. Standard record forms for the use of these special clinics will be supplied by the Board.

In return for this assistance the Board will require that the clinic will be kept up to a certain standard as follows:

1. The special clinic shall be for the treatment of venereal diseases.
2. The apparatus and furnishings for the clinic shall conform to a certain standard (Schedule A).
3. The personnel of the clinic shall be:
   a. One specialist in venereal diseases who shall be appointed by the hospital if the clinic is in connection with a hospital and by the local board of health in other cases. This officer must also be satisfactory to the Provincial Board.
   b. Such medical assistants as may be necessary shall be appointed on the same basis.
   c. One full-time social worker who shall be a graduate nurse.
   d. One clerk, if the clinic is treating more than 40 cases per week.
   e. One male orderly.
   f. If possible, one undergraduate nurse to assist in the clinic.
4. All treatment in the clinic shall be free.
5. At least one night and two day clinics shall be held per week. (This may be modified on agreement.)
6. Separate hours shall be set for men and women in the clinic; also, if possible, separate hours for the treatment of gonorrhea and syphilis.
7. Weekly reports will be required on forms supplied by the Board.
8. The clinic, including its records, apparatus, method of treatment, etc., shall be open to inspection by the Board.
9. The municipality will be expected to advance an amount for the upkeep of the clinic or clinics which shall be approximately equal to the amount advanced by the Board.
10. The social service nurse shall follow up cases outside the clinic to see that all patients continue treatment and also that any possible contacts are examined.
11. Accounts should be rendered at the end of the month and will be paid on the Board's certificate.
12. The Board reserves the right to modify these rules if such should, in the interest of the clinic, be deemed necessary.—(*A. N T.*)

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Evolution of Preventive Medicine.—In a lecture delivered at the School of Hygiene and Public Health, Johns Hopkins University, Dr. C. V. Chapin outlined the progressive stages we have passed through in the development of the public health movement in such clear and interesting manner that all public health workers should read it in the original. In regard to the health education of the public he sounds a warning

note. We are apt to follow too closely on the heels of the commercial advertiser. The professional advertiser often forgets that there is such a thing as truth, and the teacher of public health also sometimes forgets it. He aims to be effective first, last and all the time. It is how he says it and not what he says that worries him. Much health instruction is hopelessly behind the times, or else errs as much the other way by teaching as fact the most fanciful theories. There is too much teaching of error. The greatest danger of the educational movement in public health is that it will be wrecked on the shoals of error. He quotes a common admonition of Osler, when at the bedside with his patients, which was: "Have the courage to do nothing." Dr. Chapin paraphrases this admonition by saying to the writers of press articles and to the compilers of health almanacs: "When facts are not at hand, have the courage to say nothing."—C. V. Chapin, *Jour. A. M. A.*, Jan. 22, 1921, 215 (*D. G.*)

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Progress in Tuberculosis Eradication Work in 1920.—At the end of the last calendar year there were in the United States more than 5,000 accredited herds free from tuberculosis. On June 30, 1920, there were 3,370 such herds and six months later, on December 30, there were 5,013, according to figures just compiled by the Bureau of Animal Industry, United States Department of Agriculture. During the six months' period there has been a marked increase in the number of herds that have successfully passed one test. On June 30, there were 16,599 such herds, and on December 30, 27,482. The department issued a report each month showing by states the number of herds that have been tested, the number of cattle that have reacted, and the number that have been found to be free from the disease.

Minnesota, with 731 accredited herds, leads all other states, with Wisconsin second with 496 herds, and Pennsylvania third with 425. During December, 1,447 herds in which there were 13,979 cattle, were tested in Mississippi. In Wisconsin 851 herds, having in all 15,411 animals were tested.—*(J. A. T.)*

Endemic encephalitis.—Following a careful review of the literature dealing with the epidemiology of encephalitis lethargica, the author reports on 153 cases occurring in the United States during 1918 and 1919. One hundred and five of these were in persons 20 years of age or over. The relation of the disease to influenza was studied. Since about 30 per cent of the entire population had been infected with influenza during the pandemic, significance could attach to the occurrence of a previous history of influenza in cases of encephalitis only if this percentage was markedly exceeded. In the series studied 46 per cent gave such a history. In the case of males this percentage rose to 71, while in females it dropped to 29. This difference is striking since the incidence of influenza during the pandemic was approximately 30 per cent for each of the sexes. The mortality from encephalitis lethergica was almost three times as great in cases with a sudden onset as among those in which the onset was gradual. Ptosis was observed in 95 per cent of the cases, diplopia in 83 per cent, blurred vision in 72 per cent. Asthenia was present in 93 per cent of the cases and an acute debilitation out of all proportion to the temperature and relative severity of the other symptoms was one of the striking characteristics of the cases. Fever was the most constant of all symptoms. Examination of the spinal fluid was of value in excluding other conditions. No specific data were discovered on which a diagnosis of encephalitis lethargica can be made definitely, though many of the fluids showed positive evidence of a reaction of the meninges due to an inflammation of the brain tissue. Such evidence consisted in an increase in cells, or in protein substances, or both. In over half of the cases the white blood count was under 10,000. Blood culture done in four cases was negative. Animal inoculations, in monkeys, were negative, but the inoculated material was not fresh. Approximately 900 persons were exposed in the immediate families of the cases reported, and no secondary cases could be discovered. Case fatality rate was 29 per cent for all cases, and 60 per cent for cases with a sudden onset.—*Report of studies conducted in the U. S. by Dr. H. F. Smith, U. S. P. H. S. Public Health Reports*, Feb. 11, 1921.

Prevention of Diabetes.—Dr. Joslin, one of the leading authorities on diabetes in this country, in an analysis of 1,000 cases finds that this disease is largely a penalty of obesity, and the greater the obesity the more likely is Nature to enforce it. The sooner this is realized by physicians and the laity, the sooner will the advancing frequency of diabetes be checked. He minimizes the existence of a fat diathesis. Granted there is one person in a thousand who has some inherent peculiarity of the metabolism which has led to obesity, there are 999 for whom being fat implies too much food or too little exercise or both combined. At present the most common decades of onset of the disease are the fifth and sixth, in which the outstanding peculiarity, according to his analysis, is that there are more cases markedly overweight than in the other decades. Prevention of diabetes implies a knowledge of the predisposing agency. Overweight is a predisposition to diabetes. The individual who carries overweight is at least twice, and at some ages 40 times, as liable to the disease. For the prevention of more than half of the cases of diabetes in this country, no radical undernutrition is necessary; the individual is simply asked to maintain the weight of his average fellow man. It is well known that diabetic patients come too late for treatment. If the disease is detected early it is far more susceptible to diet. Its early recognition lies in frequent urinary examinations.—E. P. Joslin, *Jour. A. M. A.*, Jan. 8, 1921, 79. (*D. G.*)

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Scabies in School Children.—In order to shorten the time required in the treatment of scabies in school children a "bathing scheme" was started and proved extremely useful, reducing the average time of exclusion from school from 56 days in the non-bathed case to 12 days in the bathed cases. Dr. E. Fretson Skinner, dermatologist to the Sheffield education committee, describes the scheme as follows:

"Only severe cases are chosen—as obviously with the present establishment one cannot so treat every 'scabies' patient. The children who are selected for bath treatment are given instructions to come to the bath house at a fixed time, bringing with them a complete change of clothes.

"Arrived at the bath house, the child is stripped in a dressing room and the clothes it has been wearing as well as the second set are taken to the sterilizing chamber. They are there sterilized by superheated steam and dried—an operation taking an hour, during which the child is treated.

"Fifteen minutes are spent rubbing soft soap into the skin (mother, if intelligent, can help in this), and then for the next twenty minutes the child sits in a slipper bath of hot water, and with a 'loofah' and a nail brush the hands and other parts are scrubbed to open the scabies burrows. After the bath the skin is dried and the next fifteen minutes are employed in well rubbing in sulphur ointment. By this time the clothes are ready and the child is dressed in a sterile set, taking home another set.

"The cost of this scheme is practically the same as the cost of treatment by the old method, so that when the shortened period of exclusion is taken into consideration the bath method is really much cheaper.

"The bath method does not of course prevent reinfection, but the number of 'return cases' in the two groups—bathed and non-bathed—are significant. Whereas in the cases treated and cured at home 5.46% become reinfected, amongst the bathed cases the figure is only 1.03%.—*Medical Officer*, Feb. 5, 1921, 65. (*D. G.*)

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The Public Health Movement in the Light of Modern Psychology.—It has been the common experience of most public health workers that efforts to promote the public health simply to diminish disease and prolong life do not always succeed. Community action for health work must be stimulated by other motives. It is necessary to appeal to the instincts that activate men, in order to make the public health movement successful. Among the instincts that are particularly important agents of activity are those of self-sacrifice, praise, power, loyalty, participation, service, beauty and worship. In order to make further progress in public health work, it will be necessary to stimulate the imagination of the people, and to fill them with motives other than those which favor healthy living merely because it is desirable.—Donald B. Armstrong, M. D., and Eunice B. Armstrong, M. A., *Modern Medicine*, Dec., 1920, (*M. P. H.*).

STATE HEALTH NOTES—LEGISLATION

National. Congressional Procedure.—Up to the present time the *Journal* has presented sketches of Congressional action on health matters prepared for it by its own correspondent, Mr. James A. Tobey. With the establishment of the National Health Council this undertaking has been assumed by it in the interests of the affiliated associations. The following notes are prepared from those assembled by Mr. John F. Hayes for the Council.

At the close of the last Congress on March 4, 1921, there had been introduced 29 bills related more or less closely to public health. These fall into about nine categories.

A. READJUSTMENT OR REORGANIZATION OR NEW GOVERNMENT MACHINERY

1. Smoot-Reavis law for the survey of departments of the Government with possible reorganization of medical and health activities. This was passed December 17, 1920. It is known as Public Resolution No. 54, Sixty-sixth Congress. The committee on reorganization has been selected and consists of Senators Reed Smoot of Utah, James W. Wadsworth of New York and Pat Harrison of Mississippi, with Representatives C. F. Reavis of Nebraska, H. T. Temple of Pennsylvania and R. W. Moore of Virginia. The committee is to get to work at once to determine in what ways the executive departments of the Government overlap one another. The report is to suggest redistribution of the activities. There should be great opportunity for improved health activities in the Government if the reforms are properly presented to this committee.

Since there are some 34 different bureaus and departments of the Federal Government engaged in medical and public health work, it is probable that this committee will have important recommendations to make to Congress. An unofficial survey indicates that these independent activities are in nowise correlated. The principal ones are here noted: In the Treasury Department are the U. S. Public Health Service and the War Risk Insurance Bureau; in the Department of Labor, the Children's Bureau. In the Department of the Interior are the Division of School Hygiene and Physical Education of the Bureau of Education, the Indian Medical Service and the Government Hospital for the Insane. The Department of Agriculture has Bureaus of Chemistry, Animal Industry, Entomology and Biology, all of which are engaged to some extent in health work. In the Department of Commerce the Bureau of the Census conducts the Division of Vital Statistics. The War Department and the Department of the Navy have each one its own medical service. Then there are independent commissions and boards such as the Interdepartmental Social Hygiene Board, the Federal Board for Vocational Training, the Bureau of Safety of the Interstate Commerce Commission and the medical service of the Government printing office, that are not related to any of the other health agencies of the Government.

There is an opportunity such as has never before been presented to view and discuss the subject, and in the interest of coöperation and coördination health officers should express opinions tending to the betterment of the public service.

According to recent reports the committee is going ahead actively in the establishment of a headquarters, staff, etc. Senator Smoot, chairman, is arranging to send a questionnaire to all departments, and the information thus secured will be the basis for further action.

2. H. R. 14961. The Rogers Bill for the merger of the War Risk Insurance Bureau, the Board of Vocational Education and the United States Public Health Service is in "satisfactory progress in committee."

3. Senate 2507. Senator France's Bill "to establish an Executive Department to be known as Department of Public Health" was not reported to the Senate and thus failed of enactment. This bill provides for an elaborate system of public health activities under one department of the Government, with a member of the Cabinet at its head. This bill is worthy of the careful study and consideration of the several national health organizations.

4. Senate 1660. This bill, to provide a Division of Tuberculosis in the U. S. Public Health Service, was reported favorably by the Committee on Public Health, but did not pass the Senate.

5. Senate 4543. This bill to establish a

Department of Social Welfare was not approved by the committee.

6. The Interdepartmental Social Hygiene Board. Congress refused appropriations for most of the items requested by this board. The question of limiting the appropriation to $300,000, to be expended by the U. S. Public Health Service, was before the Joint Committee at adjournment.

7. H. R. 7. Senate 1017. This is the Smith-Towner Bill, providing for a Department of Education with its head a member of the Cabinet. It would give authority "to conduct investigations and studies in the field of education, public school education, physical education, including health education and the supply of competent teachers for the public schools." It would carry an annual expenditure of $100,000,000. Widespread opposition has developed and there is no likelihood of an early passage of the measure.

B. THE TREATMENT OF EX-SERVICE MEN

8. H. R. 15422, in part. This is a portion of the Sundry Civil Service Bill, which was passed as a separate measure. It is an elaborate provision appropriating $18,000,000 for enlargements and new constructions in hospitals for disabled ex-service men. There are indications that five new hospitals will be constructed in the country, each to cost $2,500,000, the construction work to be under the Secretary of the Treasury. It is the greatest undertaking of the kind ever made by the Federal Government. It is a matter of great interest to national health organizations. The details may be changed somewhat by the Conference Committee, but there seems to be no doubt about the general program for this expenditure being carried out.

The Sundry Civil Service Bill contains provisions for repairs and additional equipment at seven existing hospitals, appropriates $100,000 for improvements at St. Elizabeth Hospital, Washington, D. C., and provides for coöperation between medical officers of the Public Health Service with the Bureau of Mines in the health, safety and sanitation of mines at the expense of the latter. It was not passed.

9. Senate 4357. Senator France's Bill for the provision of Medical Service for Discharged Soldiers and Sailors was reported favorably to the Committee on Public Health, but did not pass the Senate.

C. TUBERCULOSIS

10. Senate 2207. This bill permitting the treatment in Government hospitals of Government tuberculous civilian employees passed the Senate, but failed to receive favorable action in the House.

11. Senate 284. This bill provides for the care of indigent tuberculous persons who are not legal residents of the state in which they are temporarily located, part of expense to be borne by state and part by Federal Government. No action was taken on the bill.

D. MATERNITY, INFANCY AND CHILDHOOD

12. Senate 3259. The Sheppard-Towner Bill for the protection of maternity and infancy has passed the Senate and was favorably reported in the House, but did not pass. The bill provides for an elaborate program, some of the details of which were given under Legislation in the *Journal* for January, 1921, page 84.

E. PHYSICAL AND HEALTH EDUCATION

13. Senate 3950. The Fess-Capper Bill provides for the promotion of physical education in the United States through coöperation with the states in the preparation and payment of supervisors and teachers of physical education, medical examination and school dentistry. Legislation of this character was favorably referred to in the Republican platform, which endorsed the principle of Federal aid for vocational and agricultural training, and further approved of a thorough system of physical education for children, including adequate health supervision and instruction, seeking to remedy the conditions revealed by the draft examinations. The opposition to the bill has come chiefly from the anti-medical groups, including osteopaths, optometrists, Christian Scientists and others.

14. Senate 1536. Senator Sheppard's Bill to establish and promote civic and health extension education failed to receive favorable action in the Senate Committee.

F. NARCOTICS

15. H. R. 16118. This bill, introduced by Representative Rainey, seeks to amend the second of the Harrison Acts of 1914 for the control of opium and narcotics. This act regulates international traffic in the drugs and the amendment will tighten the restrictions on the exportation of certain narcotic drugs to certain foreign countries, particu-

larly China and Japan. There seems to be good prospects for the passage of the bill at the special session. The first Harrison Act, which forbids the importation or manufacture of smoking opium, and the third, which regulates domestic traffic and is generally known to the medical profession as the Harrison Law, are not affected.

16. Senate 2785. Senator France's Bill providing "aid from the United States to the several states in the prevention and control of drug addiction," was reported favorably from the Committee on Public Health, but did not pass the Senate.

G. VENEREAL DISEASES

17. H. R. 12955. The Steenerson Bill forbidding the mailing of printed matter containing false advertisements on the cure of social diseases was favorably reported in the House but did not pass either branch.

H. PUBLIC HEALTH SERVICE

18. Senate Joint Resolution 141, to "permit the Public Health Service to coöperate with the states in the control of malaria," received no favorable action in the Senate.

19. H. R. 3478. The Deficiency Law approved July 11, 1919, contains provision appropriating $1,500,000 for the purchase of land and buildings and erection of hospitals by the Public Health Service.

20. H. R. 12046. The Deficiency Law approved March 6, 1920, authorizes officers of the Public Health Service to be credited with service in the Army, Navy and Marine Corps in computing longevity pay.

21. H. R. 7343. The Sundry Civil Act approved July 10, 1919, contains a provision permitting persons suffering from infectious diseases to be admitted to Marine Hospitals, not to exceed ten cases which are allowed to each hospital.

22. H. R. 7293, July 14, 1919; H. R. 7700, July 21, 1919, and 7778, July 24, 1919. These bills for the purpose of authorizing influenza research by the Public Health Service were introduced during the outbreak of the disease. None of them was acted on favorably. The annual appropriation bills have carried a provision making $500,000 available for threatened epidemics. This money is at the disposal of the U. S. P. H. S.

23. H. R. 10510. Congressman Mann's Bill provides that the United States shall coöperate with the states in promoting the health of the rural population. No action has been taken on the bill.

I. MISCELLANEOUS

24. Senate 3959. Senator Kellog's Bill is to incorporate the National Board of Medical Examiners of the United States. No action was taken on it.

25. H. R. 15482. This bill amending "the charter of the American Red Cross so that the Executive Committee shall consist of nine instead of seven persons," was reported favorably to the House, passed, and sent to the President.

26. H. R. 12046. The General Deficiency Law approved March 6, 1920, contains a provision authorizing the Secretary of the Treasury to make regulations as to disposal of articles produced by patients in hospitals.

27. H. R. 5728. Congressman Watkins' Bill would require the separate tabulation of mortality statistics to show the comparative rating of the white and colored races, and mortality for cities by residents only. No action was taken on the bill.

28. H. R. 15638. Congressman Langley of Pikeville, Ky., is the author of this bill to provide for a hospital for the treatment of trachoma in Pikeville, Ky. No action was taken on the bill.

29. H. R. Document 1017. At the close of the session Surgeon General Cumming of the Public Health Service made a request of Congress for an appropriation of approximately $1,290,000 for the improvement of the quarantine stations at Boston, New York, Philadelphia and Baltimore, to take care of the typhus situation. No action was taken at this session of Congress.

✠

A further item of national health importance has been the appointment and confirmation of Dr. C. E. Sawyer, the President's private physician in Marion, O., as Brigadier General in the Medical Reserve Corps. It is understood that he is to make a general study of the various Federal welfare activities. He has already begun to communicate with public health officials in Washington and in other cities regarding public health, education, child welfare, social justice and kindred subjects. He is to report his findings to the President, and his appointment may affect the program of the Smoot-Reavis committee.

California.—Senate Bill 406, introduced by Senator Crowley seeks to amend the State Medical Practice Act by providing that no person who does not hold an unrevoked physician and surgeon's certificate shall maintain or operate any clinical, diagnostic, pathological, biological or other laboratory in the state for the investigation, diagnosis or treatment of human beings for diseases or the prevention thereof, or for any injuries, deformities or any other physical or mental condition of human beings, or for the preparation, manufacture, standardization, sale or other disposal of any serum, vaccines, antitoxins or other biological products.

✣

Indiana.—The State Legislature, which adjourned March 7, created a new division in the State Board of Health, the Division of Housing. An appropriation of $15,000 was voted. It is obligatory to employ a director and the work of the Bureau starts as soon as the law is in effect, which will be on the issuing of a proclamation by the governor and the distribution of copies of the law.

✣

Iowa.—The Model Vital Statistics Law was passed by the Iowa House of Representatives on March 25 and went immediately to the Senate, where approval is expected.

The Iowa Legislature has passed a bill which has been signed by the governor, providing for the licensing of chiropractors in the state.

✣

Massachusetts.—The joint committee in the Massachusetts Legislature voted "leave to withdraw" on the Maternity Bill recommended by the Special Commission appointed by Governor Coolidge to investigate the general subject. The earlier story of discussion of the subject and the presentation of bills is given in the *Journal* for April, 1920, and progress was reported in the *Journal* for May, 1920. The report of the Committee is really a valuable document, presenting as it does a concise story of the benefits of maternity legislation in other countries and the results of investigations in Massachusetts. Accompanying the report was the text of a Bill suggested by the Commission. This was in effect that the State Department of Public Health is authorized to provide advice, instruction and visiting nurse care to women during pregnancy and confinement, and to mothers and their infants after childbirth, regardless of their financial condition. In cases of women requiring financial aid at such times, provision is made for furnishing it, "and no woman shall be deemed to be a pauper by reason of having received such aid." To receive the benefits of the Act the mother must have been a resident of the state for at least six months. The Department of Public Health is authorized to make regulations, employ nurses and these under certain conditions are exempted from civil service rules. Maintenance of the work is to be cared for by annual appropriations by the Legislature.

There were two bills before the Committee, that of the Commission and the Spencer Bill. The latter was unanimously rejected but there was a strong minority dissenting from the leave to withdraw on the Commission Bill, numbering 1 Senator and 5 Representatives.

The Compulsory Vaccination Bill applying to private schools was given leave to withdraw. A bill was favorably reported providing that registered dentists must be citizens of the country.

✣

New Mexico.—The following Acts have been passed by the Fifth Legislature, which adjourned March 12:

Senate Bill 163, creating a Department of Public Welfare, and merging the State Department of Health and the Child Welfare Board as bureaus of this department.

House Bill 80, amending Chapter 85, Laws of 1919 (Public Health Act) enlarging the powers of the Bureau of Public Health, abolishing municipal health officers, and making the county the local health unit under a county health officer; providing for sub-registrars, and methods of paying for the collection of Vital Statistics.

House Bill 85, amending Chapter 2, Laws of Special Session, 1920, to provide for a single, county-wide health levy of one-half mill in place of former levies in counties and municipalities.

S. J. R. No. 21. Proposing a constitutional amendment limiting tax levies. Before passage, this was amended to exempt the one-half mill health levies from other tax limitations. This assures a special

health levy as a permanent policy for the State.

Senate Bill 47. A stringent anti-prostitution act.

House Bill 137. A red light abatement and injunction act.

✣

New York.—The officers and advisory committee of the New York City Conference of Mayors and other City Officials, acting for the cities of the state, have presented to the Governor and State Legislature of New York a statement about general municipal legislation and some of the more important city problems which are likely to be referred to the State Legislature of 1921. Of the group of suggestions made by this committee, one, that of reorganizing health work, will be of interest to health officers generally. The recommendation is that a general law be passed authorizing first and second-class cities to abolish bureaus of health and to establish departments of health under the jurisdiction of an appointed commissioner. He is to have the same powers that are now conferred by general law upon boards of health and health officers, with the exception that the power of appeal shall be vested in the official or body appointing the commissioner. Third-class cities are authorized to abolish boards of health and to confer upon the health officers of such cities such powers as are now vested by general law in boards of health, except that the power of appeal shall be vested in the appointing body or official.

✣

South Dakota.—The South Dakota Legislature, now adjourned, passed House Bill No. 68, creating a board of chiropractic examiners and providing for the examination and licensing of chiropractors, with certain amendments to its original form, and also Senate Bill No. 294, which creates a Division of Child Hygiene in the State Board of Health and provides for the acceptance of any funds available from the Sheppard-Towner Bill in Congress. House Bill 202 was also passed, providing for the segregation and maintenance of feeble-minded persons in the state and appropriating money to care for them. This Bill creates a Commission for the Control of the Feeble-Minded to consist of the Superintendent of the State School for the Feeble-Minded, one physician, one psychologist, one sociologist and one attorney, appointed by the Governor. The purposes of this Act are to keep all such persons wards of the State and to prevent their reproducing their kind. The Commission is to make a survey of state institutions for feeble-minded persons, and citizens are required to report such individuals in their own families or coming within their observation, and teachers must report them if in their classes in school. The sum of $8,000 is appropriated for carrying out the purposes of the Act.

The General Appropriations Bill carried $46,700 for the use of the State Board of Health, being more than double the sum named in the appropriation of 1919.

Senate Bill No. 32, with reference to the examination of all persons wishing to practice medicine or any branch of the healing art, some of the details of which are given in the *Journal* for April, page 386, was passed by the Senate but lost in the House. House Bill 126, providing for a certificate of health and fitness from applicants for marriage was lost, and also Senate Bill No. 173, the Model Vital Statistics Bill.

✣

Texas.—The 37th Legislature passed five bills with reference to public health. Not one of them carried an appropriation although all were constructive measures. The Consolidation Act, which merges the Pure Food and Drug Department with the State Board of Health, placing the whole under the direction of the State Health Officer, is expected to save the people in the neighborhood of $15,000 a year. Another Act is in the interests of the prevention of communicable diseases, and prohibits persons infected with or affected by a contagious disease from working in restaurants, hotels, bakeries, meat markets, cafés, dairies or dining cars. The Act also provides for the proper sterilization of all dishes, receptacles or utensils used in eating or drinking in public places. A similar Act prohibits the employment of persons suffering from a contagious disease in barber shops or beauty parlors and has rigid requirements concerning sanitation. Another Act requires all maternity homes and hospitals to be registered with the State Board of Health, while the fifth requires a prophylactic solution to be dropped into the eyes of newborn babies.

STATE HEALTH NOTES—GENERAL

National.—The United States Bureau of Mines and the New York and New Jersey Bridge and Tunnel Commissions have entered into coöperative investigations in connection with the ventilation of the proposed Hudson River vehicular tunnel. The question is as to the best method of supplying fresh air and removing the poisonous products of combustion given out by motor vehicles. The Bureau of Mines has already made road tests with a hundred automobiles and trucks at its experiment station at Pittsburgh, Pa., with reference to the amount and composition of exhaust gases from motor vehicles. At the same time a set of tests has been made on a large number of students in the physiological laboratory at Yale University with reference to the dilution requirements of such gases with fresh air so as to render them absolutely harmless. Further investigations are under way at Urbana, Ill., with an experimental duct 300 feet long, similar to the ventilation duct in the tunnel, for the purpose of finding out the factors towards ventilation. This duct is fitted with special 300-horse power motors for the experiments, and the results will be of value for the information they will furnish in the flow of air through ducts of concrete. Still a fourth group of experiments is to be made at Bruceton, Pa., where a 400-foot tunnel will be constructed large enough for a single line of automobiles.

Among the experiments to be discussed here will be the diffusion of exhaust gases, temperature, conditions affected by the operation of gasoline motors, the physiological effects of temperature, exhaust gases, and smoke under operating conditions.

The U. S. Public Health Service has prepared a new motion picture film which presents the life history of the mosquito, especially the kind that transmits malaria germs. A fair share of the film is from actual life.

It has been definitely shown that pellagra varies inversely with the family income in the cotton mill villages of South Carolina. This is a result of a three years' investigation by the U. S. Public Health Service. The relationship has been suspected but it is now definitely measured. As the income falls the disease is found to affect more and more members of the same family, and as it rises the disease decreases, and it is rarely found in families that enjoy the highest incomes, even although this highest might still be low. One curious fact was found in the variation of the disease in families with the same income, but this is said to be due to differences in expenditures for food, intelligence of the housekeeper, and the ownership of cows, gardens, etc. Some differences in villages were found although they seemed to be economically similar, and these are attributed to the availability and condition of food in the local markets.

Figures issued by the Bureau of Railway News and Statistics at Chicago, Ill., and published in the *National Safety News* announce that 38,000 lives were saved on American Railways in the year 1919 by safety work. In 1906 one passenger was killed for every 183,000,000 passengers carried one mile, while in 1919 this ratio diminished to one passenger for every 476,000,000 carried a mile.

A survey of deficient individuals in Oregon conducted by the U. S. Public Health Service brings to light the fact that 75,000 men, women and children out of a total population of 783,000 are dependents, delinquents, or feeble-minded, are unable to work, and are a constant strain on the finances, strength and morality of the state. More than 500 school children out of a total school population of 32,000 were found to be more or less mentally deficient. One of the objects of this work was to obtain for the people of Oregon some idea of the problem that confronts them and an estimate of the heavy annual loss both economical and industrial. These figures will enable the legislature to work intelligently towards a program that will stop much of the economical loss and restore health and establish useful lives where so many individuals are now "down and out."

The Children's Bureau, Washington, D. C., has made a study of the infant mortality of the city of Akron, O. In the year selected the rate in the city was 86 per thousand births. Compared with other cities in this country studied by the Bureau, this is low, but the note is made that even 86 is comparatively high when New Zealand is considered, for in Dunedin a minimum is reached at only 46. In Ohio the mortality of babies of native mothers was much less

than among babies of foreign-born mothers, especially in digestive and respiratory diseases, while those artificially fed infants had a mortality of about four times that of breast-fed babies.

✠

Alabama.—In a recent statement by the Board of Health of Jefferson County, Birmingham, Alabama, the possibility of a local outbreak of smallpox is discussed by Dr. J. D. Dowling, Health Officer. There seems to be a fairly general sprinkling of the disease with one or more cases in many different communities within his district. With reference to the attitude of the public in the matter Dr. Dowling outlines the situation quite well. He notes that the spread of smallpox depends entirely upon the presence in a community of susceptible or unvaccinated persons and its prevalence will usually vary directly in proportion to the number of such persons, regardless of such control measures as isolation and quarantine however rigid or efficiently applied.

Successful vaccination affords the only practical means of protection available at the present time against smallpox, and the burden therefore rests with the individual to seek such protection by applying to a physician of his own choice or to a representative of the Board of Health for vaccination.

After some outlining of the procedure in cases of smallpox, in which it is made clear that the so-called and dreaded "pest house" is a relic of older times and only under circumstances of inadequate facilities for isolation at home is the smallpox hospital utilized.

"In this enlightened age," writes Dr. Dowling further, "no child should be permitted to enter school without first exhibiting evidence of successful vaccination either in the shape of a scar or certificate from a physician. That such a view is in keeping with sound public policy is indicated by the fact that this principle has been enacted into the laws of our Commonwealth and our courts have conceded that such a law is reasonable and valid when there is imminent danger of smallpox becoming epidemic. Yet, in spite of this, we find in many grades in many schools more than half the pupils without evidence of vaccination.

"A particular appeal is made to physicians, school authorities and others to encourage vaccination wherever indicated."

✠

Delaware.—As the result of a two years' survey in Sussex County, Del., following a similar survey in New Castle County, both of which were made by the U. S. Public Health Service in collaboration with the Children's Bureau, the state officials engaged in the care of mental defectives have become interested in the establishment of a Bureau of Mental Hygiene in connection with State Board of Charities. For the first steps in carrying out a program the Legislature has appropriated $60,000 for improving the care and treatment of mental patients at the State Hospital at Fahrnhurst. A training school for nurses specializing in neuropsychiatric diseases is to be opened and occupational education and physicotherapy will be employed.

✠

Maine.—Ten deaths from *encephalitis lethargica* have been reported, this being but a portion of the whole, since the requirement of reporting it is not yet well known to all physicians.

Augusta, Me., claims to be probably the pioneer city in New England to introduce motion pictures of lower forms of life into the class room. The film employed is that of "Bacteria," and the pictures are of the series issued by the Society for Visual Education of Chicago, Ill.

The State Board of Health is calling the attention of the citizens of the state through the press to a number of practices that are contrary to the interests of public health. One of its actions is towards discouraging the practice of dry sweeping. Damp sawdust, wetted tea leaves or bits of moist paper will prevent that wholesale distribution of dust which dry sweeping ensures.

Registration of births is a matter on which the State Board places emphasis. Its importance in legal matters and the requirements of vital statistics are good supporting reasons.

Dr. L. D. Bristol, Health Commissioner of Maine, is calling the attention of his local authorities and those having in charge the sanitation of the lumber camps. He regards these camps as places to which the class of immigrants that bring typhus might be likely to go. If a person bearing

the infected lice should make his way to a camp, the disease would almost certainly break out among the lumbermen, and these, with their proverbial restlessness, moving from camp to camp might spread the infection once introduced. "The lumber camps of Northern Maine should be put into such condition," writes Dr. Bristol, "that epidemics of vermin-borne diseases cannot threaten them. Lumbering is one of Maine's greatest industries and should be placed on a healthful basis."

✣

Michigan.—Michigan has added to its health educational outfit a motion picture on tuberculosis, which is available for exhibition in any town or city of the state or may be secured by any local grange. It tells the story of contraction of the disease by the daughter of the farmer whose herds were diseased, and leads to a finale of an "accredited herd" and the return of the daughter, cured, from a sanatorium.

State Health Commissioner Olin has undertaken to establish in the minds of the people the relationship between defective oral conditions and streptococcus infection. He emphasizes that fact that when typhoid fever is mentioned the mind turns at once to thoughts of contaminated milk or water. In the same way, he thinks, uncared for throats should be linked with the diseases in which the streptococcus is implicated.

"No diphtheria in Michigan by 1929," is the slogan of health workers in the state, in the interests of an antitoxin campaign. It is the intention of the State Board of Health to equip a laboratory for the manufacture of the prophylactic and distribute it free. It is estimated that the loss by this disease is about equivalent to $1,000,000 a year.

The state is taking a hand in the spring clean-up this year. Letters have been circulated to all municipal administratives emphasizing the necessity for removing dangerous and unsightly nuisances which may in any way menace the health of the community. Through mass meetings and other gatherings it is proposed to excite public action.

✣

Michigan is following the advice of Surgeon General Cumming of the U. S. Public Health service, in facing squarely the issue of venereal disease. It acknowledges the great number of patients treated, but claims greatest activity in work of prevention and cure. Its lecturers have addressed not less than 1,500,000 in their audiences and have distributed half a million pamphlets, while half a million of the state's citizens have attended the health exhibits. A special effort of the State Health Department is now directed toward rural sanitation, in an effort to give the country child quite as fair a chance as his city brother.

The city of Flint is undertaking to improve its milk supply by educating the producers of the milk. A letter is addressed each month to "Mr. Milk Producer," giving timely hints and suggestions. No. 40, for March, 1921, calls attention to the coming of warmer weather, the care to be exercised in keeping the utensils clean and in properly washing and scalding the cans.

✣

New Brunswick.—Following are the figures with reference to births, marriages and deaths for the Province during the year 1920. Although subject to minor changes, they are substantially correct.

Total number of births.....10,494
Total number of marriages... 3,718
Total number of deaths..... 5,545

The population of the province at the last census (ten years ago) was 351,889 and may be estimated at the present time at about 380,000, exclusive of one county not in the registration area.

The service for the collection of birth, marriage and death returns has been placed under the Department of Health of the province and was initiated on the 1st day of January, 1920, replacing the former service for this purpose which proved to be ineffective and unsatisfactory. The present service, as may be noted by the above figures, promises to be a decided improvement upon the old and the foregoing figures are the first to be published for many years concerning the vital statistics of the province.

✣

New York.—With reference to enlarged thyroid among the negroes, Dr. Overton makes note that out of 91 colored children in a school in his district no less than 18 give evidence of a well-marked enlarged gland, and the teacher, also colored, states that since coming to the school eight years ago she has been affected by the same difficulty. In the same district a school of white

children numbering 200 or more exhibits only one case of the kind.

Smallpox outbreaks have caused much demand for vaccination, and in Geneva some 3,500 persons have been inoculated. The last week in February gave a record of 19 cases of smallpox in the state with nine foci, 13 being urban cases with four foci and six cases being rural with five foci. In the city of New York there were 1,170 vaccinations in January, 1921, and 1,594 in February, against nearly 7,000 in December, 1920.

In the matter of diphtheria, at the request of the Health Commissioner of New York City the New York County Chapter of the Red Cross is undertaking to immunize 25,000 children in the kindergarten and primary grades. The technic includes determining with the Schick test which children are susceptible to the disease and injecting them with a neutral toxin. Consent of the parents is first required, and this has been accorded for half the requests. An emergency staff of four physicians, five nurses and five clerks is provided by the Chapter, and it is expected that four months will be required to immunize the entire number of school children. The younger children have been selected for the reason that the disease is more fatal here. The figures of last year show that 95 percent of the deaths from this disease were among the age groups of less than ten years.

In continuation of the guard against typhus the Health Department of the City of New York is watching the public schools for any immigrant children that enter them. These are followed to their homes by the inspectors to determine home conditions. The babies of pre-school age that are taken to the clinics are subject to similar procedure.

✚

New York.—In an effort to determine the incidence of jaundice in a locality, the State Department of Health has secured from Dr. Hideo Noguchi the information that particular note be made of the presence or absence of these symptoms: eruption, nephritis, petechia, jaundice and temperature range.

In view of the possible incoming of typhus, the Department has preferred a special request to Congress for additional appropriations to equip more fully the Quarantine Station at New York and other ports of the country.

A conference of health officers of second-class cities in New York state was held February 15 at Albany, with short papers and addresses and an opportunity to exchange experiences. The next conference is to be held at Syracuse in November.

Lake Pleasant, in Hamilton County, N. Y., is at the present time without a resident physician and in consequence the town authorities have been authorized to guarantee to a competent physician locating there the sum of $1,500 a year.

The great shortage of nurses that has been threatening the hospitals of New York City is being met in a unique way by women who in ordinary life belong to the leisure class. Two hundred volunteers have been organized by the New York County Chapter of the Red Cross and placed on duty in fifteen of the largest hospitals. By taking over such tasks as washing patients, wheeling them to and from the operating room, making beds, checking laundry and taking the histories of patients, they are releasing scores of nurses for more difficult duties. A large number of women who took Red Cross courses in home nursing during the war are acting as nurses' aides, doing practically everything the nurse does in the wards except give medicine.

✚

North Carolina.—Dr. Millard Knowlton is undertaking a very vigorous campaign against venereal disease in the state, driving home his facts with letters and printed documents. The latter are in part reports of cases from *Case Records* published by the Massachusetts General Hospital and the literature of the American Social Hygiene Association, etc. The case reports serve to acquaint the physicians of the state with some unusual diagnoses, which may be helpful to them, while the publications of the Association are for the education of the people in general and are fitted for popular reading.

✚

Ohio.—Ohio, like other states, is making a campaign against diphtheria and is emphasizing the toll taken by the children's diseases. The statistics are made pointed by this initial statement: "Imagine a plot of ground 100 yards wide and nearly 300

yards long—a six-acre lot. Suppose it had been set aside ten years ago to be used as a cemetery, to be used only for the bodies of Ohio children dying from diphtheria, whooping cough, measles and scarlet fever. It would be full today. . . Under its sod would lie the remains of 17,120 Ohio children, none of them over ten years of age." In connection with this plain statement are given the means of avoiding disease through inoculation in the case of diphtheria and by protection in the case of the other maladies. It is true and it should be very generally known that if a baby can be kept out of the way of these children's diseases until five years old, the risk of death from them is reduced to a mere fraction of that at earlier ages.

✝

The *Ohio Public Health Journal* for December makes a special study of vaccination, with some very pertinent diagrams, and a number of important summaries from the reports of the British Royal Mission on Vaccination. One of these is a statement of two hundred years of smallpox in London:

TWO HUNDRED YEARS OF SMALLPOX IN LONDON

(Rates given are average annual mortality per 100,000 population for the periods mentioned.)

Years	*Rate*
1660-1679	417
1728-1756	426
1771-1780	502
(Vaccination introduced in 1798.)	
1801-1810	204
1831-1835	83
1841-1850	40
1851-1860	28
1861-1870	28
1871 (last great epidemic)	242
(Epidemic of 1871 followed by strengthening of English compulsory vaccination law.)	
1872-1880	22
1881-1885	29
1886-1894	1

(In 1889 not one smallpox death was recorded.)

Note that the rate for the period immediately before the introduction of vaccination was 500 times as great as that for the most recent period listed.

Texas.—In his proclamation designating the week of March 13 to be Health Week throughout the state, Governor Pat M. Neff of Texas rehearsed the place of public health in modern life in these terms:

WHEREAS, the greatest instrument of liberty that has ever been written enunciated the truth that every man is born with certain inalienable rights, among which are life, liberty and the pursuit of happiness, and

WHEREAS, without perfect health man can neither enjoy his life, liberty, nor be happy, and

WHEREAS, every true American subscribes to and believes in the truths set forth by Thomas Jefferson in the Declaration of Independence, and

WHEREAS, physical and mental efficiency contributes in every way to the well being of the people and constitutes the most valuable asset of any state, and

WHEREAS, every child has the right to be well born, in order to enjoy its inalienable rights, and

WHEREAS, medical science has demonstrated beyond question that diseased minds contribute to delinquency and crime, and

WHEREAS, preventable diseases are responsible for more than 75% of all cases of sickness, and of deaths in this state, and

WHEREAS, filth, ignorance, negligence and indifference are the prime factors in the dissemination of diseases, and

WHEREAS, statistics are available to show that:

(1) Social diseases are responsible for a large percentage of the blindness of the new born, of female diseases, surgical operations and insanity; and

(2) That the development of county health departments are essential in the rural districts of Texas; and

(3) That vital statistics furnish the only accurate index of health conditions in any community; and

(4) Poor housing, bad ventilation, dust and filth are contributors to ill health; and

(5) Mosquitoes and flies are the carriers of dangerous disease producing organisms; and

(6) Rats are present in this state in alarming numbers, creating an enormous economic loss and constituting a constant health menace as disease disseminators; and

(7) Unprotected food and drinks and un-

sterilized utensils used in dispensing of same are both unwholesome and dangerous agencies in the dissemination of diseases by contact; and

(8) Wholesome water supplies and sanitary sewer systems are a public necessity; and

(9) Approved sewage disposal is essential in protecting the oyster growing, truck and live stock industry and the prevention of contamination of water courses.

Then follows the formal setting aside of the various days of the week for definite health duties.

✣

Virginia.—As a part of its routine in the education of the people, the Bureau of Vital statistics of the State Board of Health is in the habit of mailing to all wives whose marriages have been reported to the Bureau, a booklet intended to direct attention to some essential facts of preventive medicine and public morals and to arouse a desire for further information, which the Board is quite ready to meet. The booklet, "The New Family," is so attractive in its exterior that no one would think of throwing it away without a glance inside, and here the eye is caught by a succession of posters (reduced in size) with appropriate text, an important health lesson to each page.

The public health work of Chesterfield County has been advanced a step through a health unit established with the aid of the local Red Cross. For more than a year the State Health Department and the U. S. Public Health Service have been in coöperation with the county in sanitary work, and now the Red Cross has rented a headquarters, and is establishing a local public health association. At the headquarters are the offices of the association, the desk of the county nurse, the county sanitary officer, the home demonstration agent, with room for the division superintendent of schools if he will come in. Here will be assembled the health factors to the community who can work together without friction and avoid overlapping.

✣

Virginia.—To enable the teachers of the Virginia public schools to acquire the information necessary for compliance with the West Act which provides for the physical inspection of pupils and the teaching of school hygiene, the State Board of Health has, in collaboration with the Department of Education, established a correspondence course in these subjects, and already nearly a hundred teachers have enrolled for the instruction. So many inquiries have come to the health department that the commissioner has thought it wise to issue a brief statement about the course and the reasons for its establishment. The course of lessons offers free of charge a method of obtaining certain practical information without which no teacher can, after 1925, receive a certificate to teach in the public schools of Virginia. It consists of twelve lessons in physical inspection of school children, control of communicable diseases, personal hygiene and first aid to the injured. That the course will make any teacher a practical expert in any one of the topics is not to be hoped; but on the other hand no teacher can take the lessons and pass the examinations without having gained information which will be valuable to her and, if applied, profitable to her classes.

✣

Wisconsin.—The Wisconsin State Board of Health has asked the legislature to provide sufficient funds to employ three more deputy state health officers. The present number is five.

The Wisconsin rule requiring terminal fumigation has been officially abrogated and thorough disinfection by approved means, under the personal direction of the local health officer, substituted. Terminal disinfection following certain diseases remains in effect.

The Wisconsin rule on smallpox quarantine has been modified to permit exposed persons in the household to go and come at will provided they submit at once to vaccination, regardless of previous vaccination or whether they themselves have had smallpox.

The Wisconsin State Board of Health, following years of inaction by the city of Sheboygan over sterilization of the public water supply, recently issued a formal order requiring the installation of chlorine apparatus by the city not later than March 15, 1921. The city is experiencing many cases of typhoid. Lake Michigan is the source of the water supply and the depository of the city's raw sewage. The order had been bitterly fought by a section of the local press, but all medical men of the city joined in recommending chlorine.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by Drs. E. R. Hayhurst and E. B. Starr.

Tuberculosis Among Polishers and Grinders in an Ax Factory.—I. This statistical study of an industrial establishment developed the fact that a certain group of workers, viz., "polishers and grinders," are subject to a very high death rate from pulmonary tuberculosis, as indicated by the fact that the death rate from pulmonary tuberculosis per 1,000 population of polishers and grinders for the period 1900-1919 was 19.0 as compared to the general population of the mill district as a whole, of 2.0, and the mill population itself, of 6.5.

The excess death rate among the "polishers and grinders" indicates that 78 men have died during the past two decades as a result of industrial tuberculosis in these particular grinding shops.

II. The maximum number of deaths from tuberculosis among "polishers and grinders" occurs at the age of 45 years, instead of at 25 years as among the other operatives in the mill. This peculiar age incidence and the enormous excess death rate for the "polishers and grinders" are closely associated with the environmental condition of the industry, although the problem is complicated by the fact that the grinders also represent a foreign group of low social status and intemperate habits.

III. In view of the facts brought out by Winslow and Greenburg in regard to the dust content of the air of various workrooms in the plant, it seems clear that the dust produced in wet grinding is largely responsible for the enormous incidence of tuberculosis found in connection with this industrial establishment. The practical conclusion to be drawn from this investigation is that wet grinding, instead of being a dustless and innocuous process, as has commonly been supposed, may, under certain conditions, be a dusty and exceedingly dangerous one, particularly when grinding wheels of natural sandstone are used. When such is the case, every effort should be made to substitute a dry-grinding process properly protected by the installation of exhausts.—W. H. Drury, *Public Health Reports*, Vol. 36, No. 5, Feb. 4, 1921.

A Medical Society's Report on Industrial Medicine.—The Cincinnati Academy's subcommittee appointed to investigate this subject collected a great deal of data and information which are summarized at this time. The report hopes to clarify and correct much misinformation about industrial medicine.

(1) Definition of industrial medicine. "Industrial medicine is the application of extended experience and specialized knowledge in the field of medicine to meet the peculiar problems which have presented themselves as a result of the employment of man under modern factory conditions. It is the knowledge of medicine, surgery, oral hygiene, sanitation, hygiene, safety, economics and psychology, daily promoted and intensively applied to groups of employees, for the purpose of preventing or shortening the disability due to illness and accidents, and for the purpose of adjusting unhealthful working and living conditions, of correcting unhealthy attitudes towards the conditions that surround the industrial job, as well as the community life, thereby increasing individual efficiency and mass production."

(2) Scope. (a) Sanitation, (b) Hygiene, (c) Safety, (d) Medical supervision, (e) Education, (f) Medical and surgical relief, (g) Oral hygiene, (h) Home service.

(3) Purpose of industrial medicine. (a) The prevention of accidents and the prevention of disease. (b) The early discovery of abnormality and the prompt institution of remedial measures. (c) Prompt relief of minor conditions and adequate and proper attention for serious conditions. (d) Education of the worker away from bad hygiene, patent medicine, the quack and other harmful practices, toward the end that the general health of industrial workers will be improved, the efficiency of industry increased, society's burdens of low production, poverty, dependency and unrest lightened, and the value of man's labor to himself increased and his work expectancy period lengthened.

(4) Extent of industrial medical practice in Hamilton County.

(5) Qualifications for industrial medical practice. "A sound education; ample practical experience in medical relief; a well-rounded knowledge of preventive medicine; a thorough knowledge of vocational hygiene; an understanding of our present-day social and economic problems, and an ability and willingness to leave general practice and enter industry with this knowledge and apply intensively to groups in a practical manner the best that the medical profession has to offer."

(6) Remuneration of industrial physicians.

(7) Relation to the Industrial Commission.

(8) Relation to public health agencies.

(9) Relation to the medical profession.

(10) Status of industrial medicine at the University of Cincinnati.

(11) Status at large.

(12) The organization of the Cincinnati Association of Industrial Physicians.

(13) The conclusion, in the nature of recommendations (1) that the Academy recognize industrial medicine, as defined, as a distinct and legitimate branch of the profession. (2) That it lend its influence towards the adoption of industrial medicine as a part of the curricula of the University of Cincinnati. (3) That it encourage its extension in Hamilton County. (4) That a committee be appointed to keep the Academy informed on the subjects. (A communication from Dr. J. A. Watkins, Cincinnati, states that the recommendations were accepted by the Academy.)—*Cincinnati Jour. of Medicine*, Vol. I, No. 12, January, 1921, pp. 280-284.

✣

Poisoning Dangers in Manufacturing Zinc Chloride.—The production of arseniuretted hydrogen (arsine) from the presence of arsine in commercial hydrochloric acid as mixed with zinc ashes and flux skimmings in the manufacture of zinc chloride, resulted in a fatal case from the inhalation of the gas produced. The worker was engaged in shoveling the zinc ashes into a large beck. He went home complaining that he did not feel well and had severe pain in the stomach and vomited. He developed a marked lyanosis and shortness of breath. The next day his skin became brown, and delirium set in. His temperature remained normal and the pulse about so. He died comatose on the fourth day. The post-mortem findings are given by the author but were not characteristic. Chemical analysis of the substances used showed the formation of arsine and hydrogen sulphide, and stress is laid on the fact that the man breathed a fatal dose before he felt any inconvenience, or at least enough to make him move away. The very striking light brown color of the skin was also noteworthy. Similar cases are noted in the literature.—M. Bannister, *British Med. Jour.*, Sept. 25, 1920, p. 470.

✣

Compensation for Industrial Tuberculosis.—Great Britain and Ireland (and we are informed the Union of South Africa) began the compensation for fibroid phthisis or silicosis of the lungs as an occupational disease in 1918. Silicosis of the lungs was added to the list of 24 occupational diseases already specified. The Act provides for "The payment of compensation by the employers of workmen in any specified industry or process or group of industries or processes involving exposure to silica dust," who are certified to have suffered disability or death from silicosis, or silicosis accompanied by tuberculosis.—*Bulletin of the International Labour Office.* Vol. XIV, Nos. 1-3, 1919, p. 58.

✣

High Temperatures and High Humidities in Metal Mines.—Sayers gives the results of a preliminary study of this subject. A summary is given for wet bulb temperatures between 90° and 100° F. with a relative humidity of 89%, then with wet bulb temperatures of 85° to 86° and a relative humidity of 96%. In each of these two conditions blood pressure, body temperature, pulse rate, perspiration, dizziness, weakness, mental sluggishness, nausea, headache, and loss of weight were studied. Habitation was a prominent factor, and marked influence in the nature of increased body temperature, decreased blood pressure, and disturbances in other symptoms mentioned, were found. Some of these disturbances required one or two hours after the subject had reached the cool air to return to normal.—R. R. Sayers, *Public Health Reports*, Jan. 28, 1921, pp. 116-130.

Relation Between Short-sightedness and Occupation.—It is very doubtful whether the use of the eyes for near work has anything to do with the production of myopia (short-sightedness), and certainly nothing has been definitely proved. The hereditary acquirement is disputed but certain diseases associated with considerable coughing may be direct causes, as measles, whooping-cough, and bronchitis. This is due to the intermittent increase of intra-ocular pressure during coughing spells. Certain occupations—namely those involving heavy lifting in a stooping position, particularly in those who appear to take no other exercise, as, those who at intervals carry heavy weights, are associated with the onset or increase of myopia. This explains why a large number of cases of myopia occur among such workers as porters, carters, car-men and others who do not use their eyes for near work. Boxing, wrestling, cycling, rowing, or digging may be causes, particularly in youth when tissues are softer and more pliable. When anyone tries to lift a heavy box which is at the limit of his strength he experiences a great feeling of tension in his eyes. There is a tendency for the posterior part of the eye-ball to give way under the tension, resulting in elongation of the eye-ball which is the condition typical of myopia, in which the rays of light focus in front of the retina instead of squarely upon it. Any occupation which involves heavy lifting is not suitable for a short-sighted person.—Eldridge-Green, *Lancet (London)*, March 5, 1921, pp. 469-471.

✣

Four Years of the Framingham Demonstration.—Tuberculosis is responsible for one in every ten deaths. It is responsible for one in every three deaths among industrial workers. The Framingham sickness survey indicated a sickness rate of 1.8% for incapacitating illness, 6.2% for all forms of illness and 0.24% for tuberculosis, while a series of medical examination campaigns covering about three-fourths of the population, disclosed an incidence for active tuberculosis of 1%, for arrested tuberculosis of approximately 1%, and a prevalence of illness and disability of all types of 77%. The ratio of known active cases to annual deaths was found to be 9 or 10 to 1. A city of 100,000 with 100 deaths a year from tuberculosis should be provided with at least 100 hospital beds. Out of the average 100 people in a community probably 90 have tuberculosis infection. Of these two have active or arrested tuberculosis disease. Finally 10 out of the 100 are probably eventually going to die of tuberculosis. During the four years, out of the total of 356 early and advanced cases, 21% died. A careful study indicated that about 5% should have been saved. Hence, in spite of all measures the minimum of 16% would remain as the irreducible standard for mortality. Among etiological factors, abnormal environment, low wages and economic conditions, nutritional diseases, and certain race stocks are chiefly to be considered. Since the demonstration began the mortality rate per hundred thousand has fallen from 121.5 to 84.2, a reduction of about one-third. "Tuberculosis is not merely a medical problem; it is not merely a health problem; it is a social problem, in the broadest sense, requiring a comprehensive engineering plan, if the possibilities for disease control are to be realized to the full."—D. B. Armstrong, *American Rev. of Tub.*, Vol. IV, No. 12, February, 1921.

✣

Physical Examination of Industrial Workers.—The average time consumed in making regular physical examinations at establishments in 15 industries for 410,106 employees, about one-fifth of whom were women, was eight minutes per person examined. An earnest effort was being made in the majority of plants reporting to place defectives, rather than eliminate them from industry. The average percentage of rejected applicants for employment was only 4.6 and, by eliminating certain special cases, was only 2.8. Objections to physical examinations on the part of prospective or actual workers were negligible. Grouping of workers according to physical examinations suggest the following classes:

1. Persons physically fit for any employment.
2. Fit for any employment but below par in physical development.
3. Fit for any employment when specifically approved for it by examining physician.
4. Unfit for any employment.—F. L. Rector, *Jour. A. M. A.*, Dec. 18, 1920, pp. 1739-1741.

Health Service in Industry.—It is the aim of this report to offer a broad view of present practices and accomplishments in the field of industrial health work. The report is based on material gathered through field investigations and questionnaires by the National Industrial Conference Board in coöperation with the Conference Board of Physicians in Industry, which organization acts in a advisory capacity to the National Industrial Conference Board. The first portion of the report deals with the extent and character of health supervision in New England industries. The industries studied comprise abrasives, leather, metal trades, paper, rubber, shoes, textiles and sporting goods. Altogether, the 90 plants studied employ a total of 221,500 males and 95,500 females. In these plants, 37 full-time physicians were employed, 63 part-time physicians, 1 full-time occulist, 7 full-time dentists and 6 part-time dentists and 204 nurses, of whom 27 were home visitation nurses.

The orientation of the Medical Department in the industries studied shows the Medical Department responsible to the chief executive of the plant in 39 cases, to the employment manager in 44 cases, and to an insurance company in 5 cases. In the latter the entire medical and nursing personnel was supplied by insurance companies carrying the compensation policies of the establishments. The importance of branch dispensaries in large industrial establishments is pointed out, if unnecessary loss of time on the part of the workers is to be avoided. One of the criticisms made in the report is the general lack of adequate records of the work in dispensaries. Under the head of "Staff organization" it is shown that industries having marked occupational hazards, even though the number of employes is small, demand a relatively larger medical staff than the less hazardous industries. The report contains the standardized first aid treatment of injured persons which was adopted in 1914 by the Conference Board of Physicians in Industry.

In 25 of the 90 plants studied, physical examination was a requirement. Three reasons are given for rejecting an applicant for employment, viz., the danger to himself, to others, and to property. In this connection the report speaks of the necessity of the spirit of fair play on the part of the industrial physician, as between the interests of the employee and those of the employer. Reference is made to an investigation of industrial medical practice made by the Conference Board of Physicians in Industry in which it was pointed out that while 30% of all men eligible for military duty were rejected in the draft on account of physical defects, only 4.6% were found by the Board to have been rejected from industrial employment on account of physical defects. The report contains the standardized method of physical examination and the standard examination record form adopted by the Conference Board of Physicians in Industry, and also the Conference Board's classification of employees based upon physical fitness. In Class 1 employees are "physically fit for any work"; Class 2 "physically under-developed, with some slight anatomical defect, otherwise fit for work"; Class 3 "fit only for medically supervised employment"; Class 4 "unfit for any employment." The statement is made that "experience has shown that the large majority of industrial workers falls in Class 2."—*National Industrial Conference Board*, Research Report, No. 34, Jan., 1921.

✣

A "Massage Centre" for the Treatment of Injured Workmen.—The writer gives the chief reason for the formation of a "massage centre" as the amount of time lost by the workmen from injuries being capable of reduction. The centre was in a place available to 45,000 employees, 80% of whom lived within a five-mile radius. The Medical Association acted as adviser to the procedure. The employer's medical officer sent such men as come under the Workmen's Compensation Act as he thought would be benefited. The personnel consisted of the employer's medical officer, and two masseurs, who, as the result of army experience, had training in athletic and electrical treatments. A list of the equipment used is given. The paper discusses illustrative cases, electrical treatments, the cost of establishment and the current expenses of the centre,—the total amounting to about $2,000. The results of the first year's working of this centre show that both employer and employee have benefited and the employers have recently purchased accommodations for a permanent establishment.—T. L. Llewellyn, *British Med. Jour.*, Sept. 18, 1920, pp. 434-436.

PUBLIC HEALTH LABORATORY NOTES

Abstracted by Arthur Lederer, M. D.

Sterilization of Instruments.—Neither sodium carbonate nor sodium bicarbonate will prevent the rusting of instruments. It is the carbon dioxide in the water that causes the instruments to rust. Neither sodium carbonate nor sodium bicarbonate combines with the carbonic acid of the water. In order to prevent the rusting of instruments 2.5 gm. of sodium hydroxid (NaOH) should be added to 1,000 gm. of water. The sodium hydroxid should be allowed two minutes in which to dissolve and to combine with the carbonic acid of the water, before the instruments are put in the solution.—A. Rebula, *Zentralbl. Chir.*, 47, 1297 (1920); *Jour. A. M. A.*, 76, 559 (1921).

✣

Studies of the Nasopharyngeal Secretions from Influenza Patients.—From the filtered nasopharyngeal washings from early cases of uncomplicated epidemic influenza and from lung tissues of experimental animals, the authors have cultivated minute bodies of characteristic morphology which are strictly anaërobic, are filtrable, and withstand glycerolation for a period of months. The effects on the blood and in the lungs of rabbits and guinea-pigs injected with these bodies are similar to those produced by the filtered and unfiltered nasopharyngeal secretions from early cases of epidemic influenza.—Peter K. Olitsky and Frederick L. Gates, *Jour. A. M. A.*, 76, 640 (1921).

✣

Bence-Jones Proteinuria.—A large quantity of albumin in otherwise negative urine in a patient with normal renal function and normal blood pressure and a marked secondary anemia should suggest the possibility of Bence-Jones proteinuria, especially when bone lesions are present. Bence-Jones proteinuria is significant from a diagnostic and from a prognostic standpoint of multiple myeloma, since it occurs in 80% of all cases, and usually is followed by death within two years. The quantity of Bence-Jones protein excreted is independent of the protein intake, evidenced by an approximately constant excretion for three-hour periods, irrespective of changes in diet. The amount of Bence-Jones protein excreted during the night when food is not taken is only slightly less than the amount excreted during the day. There is not a constant relationship between the quantity of Bence-Jones protein and the total urinary nitrogen excreted. As the finding of Bence-Jones protein in the urine led to its detection in the blood, it may be possible that other proteins of a similar or dissimilar nature are in existence in the blood and are not excreted by the kidneys.—Waltman Walters, *Jour. A. M. A.*, 76, 641 (1921).

✣

Effect of Antisyphilitic Treatment on the Colloidal Gold Reaction.—The colloidal gold reaction shows a tendency to decrease under the influence of antisyphilitic treatment, but may remain unchanged or even increase in intensity. The more pronounced the colloidal gold curve the less it is affected by treatment. On the other hand, the lower curves are more readily brought down to normal. A positive colloidal gold curve may be of diagnostic value in cases having received previous treatment, but a negative reaction is of less significance. A "provocative" reaction may appear in the spinal fluid as well as in the blood Wassermann as a result of the institution of treatment. The colloidal gold reaction does not parallel or follow the clinical symptoms of the progression or regression of the disease. If the colloidal gold curve changes after treatment, it increases or decreases in intensity and occasionally drops back into another zone, but is usually a symmetrical curve and does not become atypical. The Nonne and Wassermann reactions tend to parallel the colloidal gold curve in its behavior to treatment and in the provocative reaction. The cell count is increased only in spinal fluids from cases showing affection of the central nervous system, but even in such cases it is not always constant and bears very little relationship to the other routine tests or to clinical signs, improvement or provocative reactions.—Margaret Warwick, *Arch. Int. Med.*, 27, 238 (1921).

The Sachs-Georgi Reaction for Syphilis.—The technique employed is as follows: The serum or spinal fluid to be tested must be absolutely clear after being centrifuged, free from cotton fibers or other particles. It is inactivated in the water bath at 56° C. for one-half hour. Three drops of serum are then mixed with 1 cc. of sterile salt solution (0.85%). To this diluted serum, 0.5 cc. of cholesterinized alcoholic beef heart antigen, which has been prveiously diluted 1 to 6 with 0.85% salt solution, is added. The tubes are then gently agitated and placed in the incubator at 37° C. for from 18 to 24 hours. A reading is taken at this time; most of the positive serums will have flocculated. The tubes are kept at room temperature for the next 24 hours, and final readings are then made. An examination of 1,042 serums and cerebrospinal fluids by means of the Wassermann and the Sachs-Georgi reactions demonstrated a close parallelism of the two reactions (92%). In sixty-two cases in which the Wassermann reaction was negative while the Sachs-Georgi reaction was positive or doubtful, the clinical history or examination revealed evidence of syphilis in 58%. The technic of the Sachs-Georgi reaction is simple, only one biologic reagent is required (antigen) instead of the four used in the Wassermann test (antigen, amboceptor, complement and red blood cells). This simplicity adds to the uniformity of the results. The ultimate specificity depends on the preparation of a proper antigen. Because of its simplicity, and the fact that it is frequently positive in syphilitic cases when the Wassermann test is negative, the authors are of the opinion that the Sachs-Georgi reaction offers a valuable aid in the routine examination for syphilis when used in conjunction with the Wassermann reaction.—S. A. Levinson and W. F. Petersen, *Arch. Dermat. and Syph.*, 3, 286 (1921).

✚

Histo-Pathology of Epidemic (Lethargic) Encephalitis.—In the nervous tissue from cases of epidemic (lethargic) encephalitis within and without the nerve cells minute forms have been observed, to all appearance consisting of a central generally basophil particle and of a delicate little stainable body, irregularly round or oval in shape. For these forms the term "minute bodies" is proposed *pro tempore*. The bodies are generally discrete, and provided with one granule, but dumbbell shaped forms occur as well as others with two central particles arranged in pairs. An as yet not quite definable relation seems to exist between these forms and a granular, pigment-like material occurring within the nerve cells in places where brown or black pigment is not generally found. Minute forms, similar in shape, structure, and staining properties to those observed in the nervous tissue, have been traced within and without the cells infiltrating a salivary gland from an acute case of the disease.—C. Da Fano, *Brit. Med. Jour.*, No. 3135, p. 153 (1921).

✚

Acute Respiratory Infection in Man Following Inoculation With Virulent Bacillus Influenzæ.—Virulent influenza bacilli, when injected into the nose and throat of healthy volunteers, may excite in them an acute respiratory disease, similar in many respects to influenza, but falling short of the typical clinical picture. In such cases influenza bacilli, biologically identical with those inoculated, may be recovered from the discharged as long as symptoms persist and often for some time thereafter. Filtrates of *B. influenzæ* cultures, when similarly injected into two healthy volunteers, produced neither local nor constitutional reaction. The inoculation of healthy volunteers with virulent hemolytic streptococci may in some cases induce an acute follicular tonsillitis, with fever and leukocytosis. A virulent pneumococcus type 4 on the other hand, was injected into the nose and throat of two healthy volunteers with impunity.—Russell L. Cecil and Gustav I. Steffen, *Jour. Inf. Dis.*, 28, 201 (1921).

✚

Enumeration of Blood Cells and Bacteria.—The procedure described by the author, although based on the same general principles as Wright's method, differs in that it can be used to count not only bacteria but also human blood cells, and that the standard consists of a permanent suspension containing an exactly determined number of corpuscular elements per unit volume. The corpuscular elements selected for the preparation of the standard emulsion are the red corpuscles of the blood of a hen. The method is described in detail.—G. Dreyer, *Lancet, London*, Jan. 29, 1921; *Jour. A. M. A.*, 76, 684, (1921).

Dilution Unit in the Wassermann Test.—The author determines the smallest amount of serum which will induce the positive reaction, calling this 1/10 as the unity. He dilutes the serum with physiologic saline (9/1,000). When the reaction is positive at 1/40 he calls this 4 units; at 1/100, 10 units; at 1/200, 20 units. By this method of dilutions it is possible to record with precision the reaction by the number of units.—E. Peyre, *Presse Médicale, Paris*, 29, 56 (1921); *Jour. A. M. A.*, 76, 687, (1921).

✚

Infection With B. Fæcalis-Alkaligenes.—The number of cultures made and the great predominance of *B. fæcalis-alkaligenes* in all of them leaves no doubt that this organism was the causative agent in the production of the lesions, which were those typical of severe infection by the typhoid organism. The literature available mentions the occasional production of disease simulating typhoid fever by *B. fæcalis-alkaligenes*, but details are lacking.—Mazÿck P. Ravenel, *Jour. A. M. A.*, 76, 720 (1921).

✚

Xanthochromia.—The author reports three cases in which the spinal fluid obtained by lumbar puncture was of a bright yellow colour, and discusses the significance of this condition. Xanthochromia has been found in such a variety of spinal conditions that no etiological factor would seem to be common to all. It has been observed in neoplasms of the cord and its membranes, gumma of the meninges, adhesions between the membranes, vertebral tumours, and fractures, tuberculous meningitis and spondylitis, spinal gliosis with syringomyelia, multiple sclerosis, pachymeningitis, and several other conditions. The yellow fluid by itself is perhaps not of much importance, but when in association with the color there is an increased coagulability of the fluid, then there is practically always some obstructive lesion of the spinal canal. The obstruction to the flow of the cerebrospinal fluid allows of the formation of a pocket in which the fluid stagnates, and into which various elements pass by transudation from the vessels within its walls. It is sometimes possible to obtain hæmoglobin reactions in certain cases of xanthochromia, and it has been suggested that there are minute hæmorrhages into the spinal canal and ventricular spaces to account for the yellow coloration, and it may be that decomposition of the hæmoglobin has proceeded so far in the other cases that one fails to discover traces of it. It must be admitted, however, that the occurrence of yellow spinal fluids is not yet satisfactorily explained.—Levison, *Arch. Int. Med.*, Oct. 15, 1920.

✚

Mechanism of Bacillus Carrier State.—The author presents experimental evidence on the mechanism of the carrier state. It is shown in the case of the Friedländer bacillus carriers that the breeding place of the bacteria is in a definite focus—the tonsil. From this point the organisms are discharged into the open pharyngeal cavity, and at times they may be introduced into the nose. Of 85 individuals 5.8% were found to be carriers of *B. Friedländer*. It was impossible artificially to produce a carrier state by repeated inoculation with *B. Friedländer*. The conclusion reached is that the carrier state depends on a focus of diseased tissue which affords a breeding place for the bacteria.—A. L. Bloomfield, *A. Rev. Tub.*, January, 1921, 847. (*D. G.*)

✚

Experiment in Transmission of Malaria to Monkey.—The experiment consisted of repeated intravenous injections to a robust *Macacus cynomolgus* of 12 cc. of blood containing malarial parasites drawn from a patient with tertian malarial fever. Clinical observations revealed only a slight thermic elevation a few hours after the injection, but all morphological examinations of the blood of the animal gave negative results.—E. Bertorelli, *Annali d'Igiene*, November, 1920, No. 11 (E. C.).

✚

Avirulent Diphtheria Bacilli Not Pathogenic.—Certain facts stand out among the results of the experiments. Two points, however, are of great importance. First, avirulent diphtheria bacilli are devoid of pathogenic importance for man; and secondly, the carrier of avirulent diphtheria bacilli does not constitute a menace to the health of the community.—W. L. Moss, C. G. Guthrie and B. C. Marshall, *Johns Hopkins Hospital Bulletin*, 32, 37 (1921).

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